

AMERICAN BEE JOURNAL

APRIL, 1920



MOSES QUINBY, BORN APRIL 16, 1810; DIED MAY 27, 1875.

One of the first to engage in honey production on a commercial scale and the original advocate of the large hive.

Order Your Bee Supplies Now

NOW is the time to check up on your hives and accessories to make sure that everything is complete and in perfect condition for the coming season. Our complete line of Bee Supplies includes everything needed by the modern Beekeepers. Besides our own exclusive articles we are distributors for the famous Lewis Beeware line, and dealers in Root's Extractors and Smokers, and Dadant's Foundations. Orders placed now can be filled promptly. Prices on many articles are sure to advance within the next few months. Send for our large 1920 Catalog today.

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Hives, all sorts
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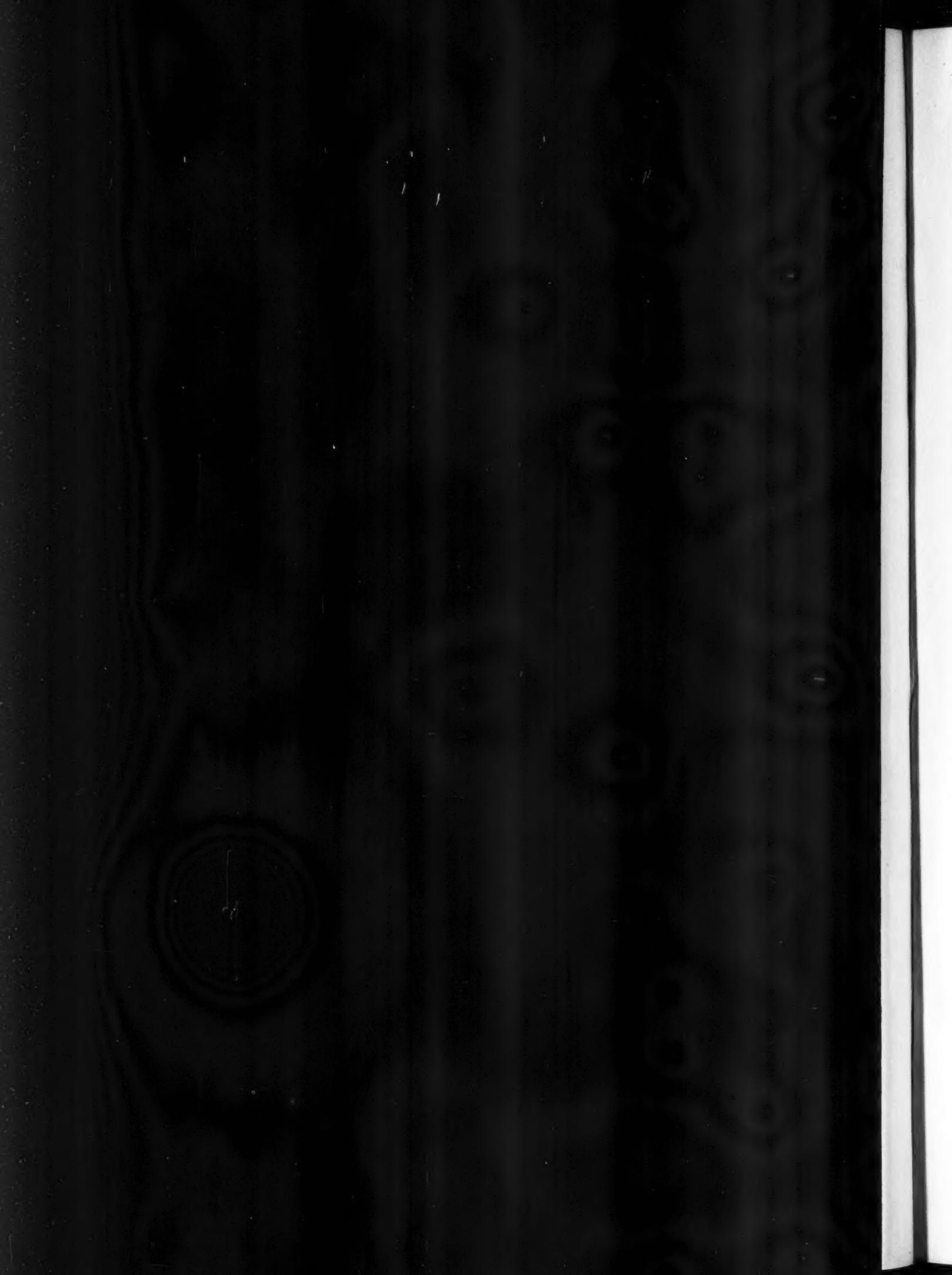
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THIS new catalog contains over 40 pages of every variety of Beekeeper's Supplies, including all the latest and most improved devices. It is really a valuable reference book on beekeeping accessories.

THE FRED W. MUTH CO.
"THE BUSY BEE MEN"

CINCINNATI, O





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Has been our watchword in office, factory, apiaries and shipping room since we started manufacturing

DADANT'S FOUNDATION

over forty years ago

¶ Any possible improvement in manufacture, packing, etc., suggested to us has been painstakingly investigated, and, if desirable, acted upon.

¶ That is why **Dadant's Foundation** is recognized by its thousands of satisfied users as most desirable and used by them in their apiaries exclusively.

¶ They are assured of a standardly uniform product; made as nearly perfect as is possible by human efforts.

¶ **Dadant's Foundation** is the result of over forty years concentrated effort and accumulated experience.

*Every inch, every pound, every ton, equal to any sample
we have ever sent out*

Ask your dealer for Dadant's Foundation, if he hasn't it, write to us

Catalog of bee supplies, prices on working wax into foundation, and our prices on beeswax for the asking

DADANT & SONS, Hamilton, Illinois

The Severin Melter and Separator combined will take care of those cappings you have been keeping around in the way. A sticky mess.



Clean them up as you go, and start each morning with everything out of the way. Think of having your wax ready for market direct from the uncapping knife, and the amount of honey saved over the old way has surprised many. The only melter of its kind on the market. Four improvements for 1920.

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QUEENS—FINE ITALIAN—QUEENS FROM SELECTED BRED-UP STOCK

Now booking orders for June delivery at following prices:

Pure mating, safe arrival and satisfaction guaranteed

	1	12	100
Untested	\$1.35	\$15.00	\$110.00
Select (Untested)	1.75	18.00	150.00
Tested	2.50	24.00	200.00

A few more package bees for late May and early June delivery.

E. A. HARRIS, Albany, Alabama

Am now booking orders for Michigan-bred Queens

THREE BAND ITALIANS ONLY TESTED DISEASE RESISTORS

PRICES

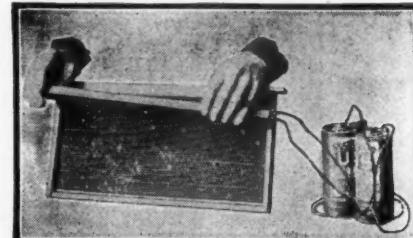
	June 15 to July 15			July 15 to Oct. 1			100
	1	6	12	1	6	12	
Untested	\$1.50	\$8.00	\$15.00	\$1.30	\$7.50	\$13.50	\$110.00
Select untested	1.75	9.00	16.00	1.60	8.00	14.00	115.00
Select tested, any time after June 20				3.00	16.00	29.00	
Select day-old virgins, after June 1				.60	3.50	6.50	50.00

All queens hatched in nursery cages and any inferior ones are killed.

All queens mated in two-frame or three-frame nuclei. No baby nuclei in yard.

Books, opened April 1. If you are going to need good queens this summer now is the time to order them.

D. A. DAVIS, Birmingham, Mich.
216 Greenwood



ELECTRIC IMBEDDER

Price without Batteries \$1.25
Not postpaid.

Actually cements wires in the foundation. Will work with dry cells or with city current in connection with transformer. Best device of its kind on the market.

For sale by all bee supply dealers

Dadant & Sons, Manufacturers
HAMILTON, ILL.

BEE SONGS, 2c EACH

I will mail copy of "Songs of Bee-dom," having 10 bee songs, for only 20c; 7 Teddy Bear souvenir postal cards for 10c; J. J. Wilder's book, "Southern Bee Culture," 30c; Danzenbaker 3½ in. Bee Smoker, 90c. All postpaid at prices given. Address GEORGE W. YORK, 1128 W. Glass Ave., Spokane, Wash.

THAGARD'S ITALIAN QUEENS Bred for Quality

Untested	\$1.50; 6, \$7.50; 12, \$13.50
Select untested	\$1.75; 6, \$9.00; 12, \$16.00

I guarantee pure mating, safe arrival and perfect satisfaction. Circular free.

V. R. THAGARD, Greenville, Ala.

**NEW BINGHAM
BEE SMOKER**
PATENTED



The Bingham Bee Smoker has been on the market over forty years and is the standard in this and many foreign countries. It is the all important tool of the most extensive honey producers in the world. It is now made in five sizes.

	Size of stove	Shipping weight.	Price.
Big Smoke, with shield	4x10 inch	3 pounds	\$2.50
Big Smoke, no shield	4x10 inch	3 pounds	2.00
Smoke Engine	4x 7 inch	2 1/4 pounds	1.50
Doctor	3 1/2x7 inch	2 pounds	1.15
Conqueror	3x 7 inch	1 3/4 pounds	1.00
Little Wonder	3x5 1/2 inch	1 1/2 pounds	.80

Smoke Engine or Doctor in copper, \$1 extra.



The Big Smoke has just been produced in response to a demand for a larger size smoker, one that will hold more fuel, require filling less often, from extensive bee handlers. The shield designated by the letter "B" in the cut above, is designed as a matter of protection from the hot fire pot. Many hold the smoker by the bellows, between the knees, when at work, and the shield will prevent burning of the trousers or one's legs.

The Woodman Section Fixer, a combined section press and foundation fastener, of pressed steel construction, forms comb-honey sections and puts in top and bottom foundation starters, all at one handling. It is the finest equipment for this work on the market.

TIN HONEY PACKAGES

3 lb. Friction Top Cans in cases of 24.	5-lb. Friction Top Pails in cases of 18.
3 lb. Friction Top Cans in crates of 618	5-lb. Friction Top Pails in crates of 100.
2 1/2-lb. Friction Top Cans in cases of 24.	5-lb. Friction Top Pails in crates of 308.
2 1/2-lb. Friction Top Cans in crates of 450.	10-lb. Friction Top Pails in cases of 6.

SPECIAL PRICES

Crates of 100 five-pound pails, \$8; crates of 200 for \$15.
Crates of 100 ten-pound pails at \$12.50 Ask for quotation on 60 pound cans.
Shipments made from Michigan, Ohio, Illinois and Maryland factories.

A. G. WOODMAN CO.
GRAND RAPIDS, MICH., U. S. A.



**ITALIAN
QUEENS**

The Old Reliable Three-Banded Italians. The best allround bee to be had. Queens ready to mail April 1. Will book orders now. Will guarantee safe arrival in United States and Canada. Prices for April and May:

Untested, \$1.50; 6, \$8; 12, \$15
Tested, \$2.25; 6, \$12; 12, \$22.
Select tested, \$3 each.

Descriptive circular and price list free.
JOHN G. MILLER,
723 C Street, Corpus Christi, Texas.



QUINN'S QUEENS OF QUALITY

Have no superiors—"There's a reason." Are Mendelian bred, good qualities accentuated. Gray Carniolans, Gray Caucasians, most gentle of all, prolific, hardy, vigorous, disease-resistant, white comb builders—they deliver the goods.

ITALIANS, 3-banded, line bred, pedigree; need no boosting; they speak for themselves.

CHAS. W. QUINN, Sabot, Va.

**HONEY MAKING—MONEY MAKING
ITALIAN**

Queens first ready for mailing April 15.

Untested, \$1.50 each; 25 or more, \$1.35.
Tested, \$2.50 each; 25 or more, \$2.25.
Select tested, each \$3.00.

I also furnish nuclei and have a limited amount of bees by the pound to sell. Circular free.

R. V. STEARNS, Brady, Texas

FOR SALE

200 two-frame nuclei ready for delivery from May 1 to 20. \$5.50 each with young untested queen. Where tested queens are wanted \$6.50 each

**COTTON BELT APIARIES
ROXTON, TEXAS**

BEE SUPPLIES

We carry a complete stock of supplies at all times, and can make prompt shipments. Our prices will interest you.

**Send Us Your Inquiries
A. H. RUSCH & SON CO.**
Reedsburg, Wis.

HERE THEY ARE MR. BEEKEEPER

at Newark, Wayne Co., N. Y., ready to answer your call. The best of everything. Just read this list: Lewis Beeware, Sections, Shipping Cases, Frames, Hives, Hershiser Wax Presses and other supplies, Dadant's Unexcelled Foundation, all standard weights and sizes; also the Electric Wire Imbedder, Bingham Uncapping Knives, including steam heated, with oil stoves and generators. Bingham Smokers, all sizes, with genuine leather bellows; Root's Extractors, all sizes of hand and power machines; Bee Books, written by all leading authors in beeedom.

All sizes of Friction Top Pails, and also 60-lb. Cans, new and second hand. Also Cement-coated Nails for nailing beehives and supplies; and all sized spools of Tinned Wire, Bee Brushes, Feeders, Queen-Rearing Cages, Bee Gloves and Capping Melter, and all practical supplies you will need.

A market for your honey or wax and a plant to render your old combs and cappings.

Over 1,000 beekeepers took advantage of this service station at Newark in 1919 for the first time. Now all together for a greater 1920.

New catalog free. Our discounts will save you money.

THE DEREOY TAYLOR CO., Newark

(Wayne Co.) New York.

BEESWAX WANTED

We require approximately 50 tons of beeswax during the next three months, to take care of the enormous demand for SUPERIOR FOUNDATION. We are paying highest cash prices, and an extra allowance of several cents per pound when exchanged for foundation, bee supplies or honey cans. Write for prices and shipping tags, stating quantity.

SUPERIOR FOUNDATION

Get our prices on your foundation requirements for the season. We maintain the same high quality in every pound we manufacture. SUPERIOR FOUNDATION assures SUPERIOR RESULTS.

BEE SUPPLIES

We carry a complete stock of bee supplies and honey cans, and can fill your entire order. Prices on request.

SUPERIOR HONEY CO., Ogden, Utah

(Manufacturers of Weed Process Foundation)

QUEENS**PACKAGE BEES****QUEENS**

Did you read Prof. H. F. Wilson's write-up in Gleanings, March issue, in regard to the packages of bees and queens he received from me last year? Notice he said some of those packages of bees and queens received in May gathered 150 pounds of honey. That speaks for itself in regard to the quality of my Queens. The 2-pound packages of bees and queens I shipped Mr. David Running in 1917 gathered 140 pounds of honey (He was then President of the National Beekeepers' Association). Have booked all the orders I can guarantee shipping on time for April, but send for Free Circular for later shipping, which states our guarantee; also gives prices on bees by parcel post, nuclei, etc., 3-banded and Golden queens. Have secured the best queen men obtainable, and we are prepared to turn out 6,000 Queens per month. They do nothing but take pains in rearing the best of queens. Careful inspection before shipping. Have an entirely separate crew for shipping bees, etc.; 20 years a beekeeper.

Prices F. O. B. Here by Express

1-lb. pkg. bees	\$2.40, 25 or more	\$2.16
2-lb. pkg. bees	\$4.25, 25 or more	\$3.83
3-lb. pkg. bees	\$6.25, 25 or more	\$5.62

Add price of queen when ordering bees.

Queens

Untested	\$1.50 each, 25 or more	\$1.35
Select untested,	\$1.65 each; 25 or more,	\$1.50.
Tested	\$2.50 each, 25 or more	\$2.25
Select tested	\$3.00 each	

NUECES COUNTY APIARIES, E. B. AULT, Prop. CALALLEN, TEXAS**Read "THE BEEKEEPER"**

The only Canadian bee publication. Keeps beekeepers closely in touch with Apicultural conditions in Canada. It is the official organ of the Beekeepers' Associations for the three provinces—Ontario, Manitoba and New Brunswick. Beekeeping and horticulture are effectively combined to make a live, attractive and practical publication.

Price, postpaid, \$1 per year

United States, \$1.25

Foreign, \$1.50

Send for a free sample copy

The Horticultural Publishing Co., Ltd., Peterboro, Ontario

EARLY NUCLEI FOR SALE

I will have 200 two and three frame nuclei for shipment in March and April and desire to ship to parties wanting 25 or more nuclei. Two frame nuclei, \$4.00 each, three frame nuclei, \$5.00 each without queens. When queens are wanted, add \$1.50 for untested and \$2.50 for tested queens. Orders must be booked early and a deposit made of 25 per cent of each order. No personal checks accepted.

C. S. ENGLE, Rio Hondo, Texas

Our Marketing Service

Why Not "FOSTER" Your Selling

Our service in this regard extends to honey marketing, market bulletins, special advances on honey crops and honey in storage, selling bee supplies at a fixed, low profit, cash for your crop when shipped, pools for those that so choose, etc. Service is what you want, and we stand ready to serve you. Our organization is full of pep. Our purpose in doing business is only two-fold. First: To build up a great national demand for and to educate the people to honey. Second: To make for bigger and more profitable beekeeping in our territory. By a sales organization we can accomplish the first purpose. By the service that we can render you through the various branches of our organization we can help accomplish the second purpose.

We would like to enter into a marketing agreement with beemen in the Rocky Mountain territory. You attend to the production and we will do your selling. If you are in our territory let us hear from you. We know that we can serve you satisfactorily. We absolutely will not solicit any business unless we know that we can handle it. Our distributive methods—such as advertising, demonstration and salesmen—will be increased in size as we get more honey lined up. We are confident that our marketing service fills a need. We can work together better than we can work apart, and all our work should be towards greater and more profitable honey production and more national distribution. We want your business because we know that we can take care of it properly.

OUR SUPPLY SERVICE

Why Not "FOSTER" Your Buying

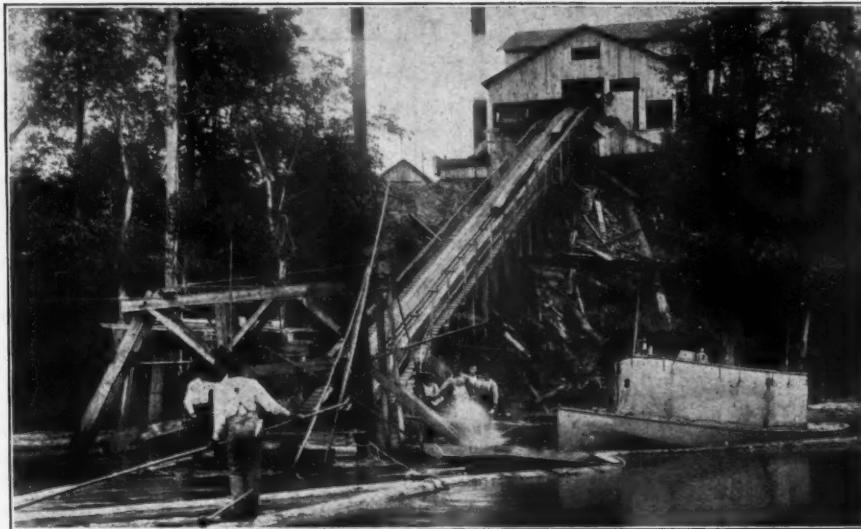
Give us a chance to figure with you on your supply orders. We have the goods to deliver and have established a branch at Delta, Colorado, to help take care of the business. Gale H. Patterson is our local manager at Delta, and he also stands ready to serve you. We have put a principle in our business—"Service First" Ask the men who have been dealing with us. Mr. Wesley Foster, who is President of our company, did not let a beekeeper who was dealing with him carry over any honey in 1917, 1918 or 1919. Rather than judge us by our promises, judge our ability and the sincerity of our intentions by the past record. We have unlimited confidence in beemen. We want to win your confidence. We want to justify your confidence in us.

We want to publicly express our appreciation of the many customers who have dealt with us so satisfactorily in the past and who are coming back to us with their valued business this year. You may refer to the National State Bank of Boulder, Colo., or to any Mercantile Agency as to our financial strength and business integrity. We know the business from all sides, as we are producers, packers, shippers and buyers of honey and dealers in bee supplies. We always have the time to help you with your problems.

"FOSTER" Your Business

THE FOSTER HONEY & MERCANTILE CO.
BOULDER, COLORADO

A "BEEWARE" LINE FROM MILL TO YOU



UP IN THE NORTH WOODS SNOW AND ICE ARE MELTING, APRIL'S SUN IS TURNING RIVULETS INTO TORRENTS. HUGE PINE LOGS ARE FLOATING DOWN TO THE MILLS, THERE THEY ARE CUT INTO CLEAN, WHITE LUMBER, ONCE "MONarchs OF THE FOREST"—NOW LEWIS "BEEWARE."

READ YOUR "BEEWARE" CATALOG COVER. YOUR DISTRIBUTOR'S NAME IS THERE. WRITE HIM TODAY. HIS STOCK IS READY.

SOUTHERN BEEKEEPERS—Don't forget your "Beeware" branch, 10-12 Front Street, Memphis, Tennessee. Also we are glad to announce a new distributor at Charleston, W. Va.,—The Kanahwa Seed Co., 617 Virginia St.

LOOK
FOR



THIS
MARK

Have you read "How to Manage Bees in Spring?" It costs 5c. All 14 booklets mailed for 70c.

BRANCHES AND DISTRIBUTORS EVERYWHERE

**G. B. LEWIS COMPANY, WATERTOWN,
WISCONSIN**
MAKERS OF BEEWARE

AMERICAN BEE JOURNAL

VOL. LX—NO. 4

HAMILTON, ILL., APRIL, 1920

MONTHLY, \$1.00 A YEAR

SPRING MANAGEMENT

BY C. P. DADANT

TO speak of spring management, on April 1, to beekeepers in Texas, or California, or Florida, is belated advice. But in our northern and middle States, the bees barely get out of winter's confinement by the end of March, and before that time it is hardly advisable to disturb them, unless we have not done right by them and have left them, in the fall, with insufficient stores. Usually there is enough to last them till April, when the increased amount of breeding will require more consumption of food. It is also in March that colonies are usually taken out of the winter repositories.

The cleaning out of the winter's refuse is usually left for the bees to do. With strong colonies, well sheltered, or after a mild winter, this is probably as good a way as any. But when the bees have suffered much and a handful or more are lying on the bottom, it is a mistake to leave this work to them, when we can do it so much more promptly. Listen to the old teacher, Dzierzon:

"The dead bees lying on the floor and the wax dust (cappings) are removed. The latter is not thrown away, but parted from the dead bees by a little sieve, because it contains the purest wax. If the carrying out of the dead bees is cared for by the bees, many living bees are lost through it, by falling in the water or on the cold ground, and chilling before they can disengage themselves from their burdens. It is preferable to save them this labor, which the beekeeper can do in a few seconds."

Time is money, and most beekeepers will think little of saving the light dust of beeswax made from the cutting down of the cappings. Yet this old-country process produces quite a little good wax.

At the same time a soiled hive or bottom-board may be exchanged for

a clean, dry one. We have sometimes saved a weakened colony by a little attention of this kind. If we use a division-board, it will be well to follow the advice of Professor Cook, another of our old-time advisers:

"I have never yet lost a colony by spring dwindling. Crowd the bees onto a few frames; give them abundant food; cover warmly above and at sides of division-boards with generous bags of sawdust, and leave these on the hives if the weather remains cool."

It is true that this requires later visits to enlarge the space again for brood when the colony becomes strong and the weather is warm. Beekeepers with several apiaries can-

not do much of this. Yet it pays for the trouble.

See to it that your bees have plenty, so they may rear brood without stint. Be sure they are in easy reach of water. Water, as far as we know, is not needed by bees, except to prepare the food for the larvae or to dilute sweets that are too thick for consumption. But spring is the time when most of it is used, and we lose more bees from flying out in cool days after cold water than in any other way. If you must feed, feed warm, well diluted food. One of the best beekeepers of Michigan, Mr. Bartlett, produces an artificial flow which induces the bees to breed without actually supplying them with much stores. He mixes sugar with



The friction top pail with small holes punched in the cover makes the best feeder for bees. For use it is inverted directly above the cluster, on top of the frames.

water in the proportion of about a pound to the gallon, producing a sweet containing over 80 per cent of water. This supplies the water. It is fed outside, when the weather is favorable. Feeding in the hive is our preference, with a less diluted sweet.

The best way to feed, however, is to supply the bees with ample stores in the combs. As that peerless teacher, George S. Demuth, urges in his lectures, let the feeding be automatic, by supplying the bees with enough honey so that they may have a surplus with plenty of breeding room until the crop comes.

Still, stimulative feeding has proven good in many instances. But it requires good judgment and must not be indulged in at inopportune times. Mr. Langstroth wrote: "I always feed my bees a little, even if I know that they have enough and to spare. There seems to be an intimate connection between getting the honey and the rapid increase of breeding, in a hive. The taste of something sweet, however small, exerts a very stimulating effect upon the bees."

Circumstances should guide our actions in this matter of feeding. Looking back at the writings of the old masters, we find many instances of the desirability of keeping the bees encouraged and with sufficient stores to breed rapidly. Bevan quotes Februrier in this regard. He says:

"The weather in February, 1810, having been very mild, the bees about Versailles were in a state of great forwardness with their brood; but the temperature afterwards became cold, and continued so, till the store of honey in some hives was exhausted, and nearly so in all. Two neighbors of his adopted opposite lines of conduct on this occasion, one fed his bees liberally, the other not at all; whilst Februrier himself, with an ill-judged economy, adopted a middle course. The result was remarkable and highly instructive. The neighbor

who fed not at all lost three-fourths

of his families. Out of 22 stocks Februrier lost two, the remainder swarmed very late, and some of the swarms were very feeble; whilst the liberal feeder saved all his old stocks, and his first swarms issued so early as to be succeeded by strong after-swarms."

The reader whose bees are short will wonder how he is to do when sugar is scarce or not to be had. There is still one remedy. Your colonies are not all of the same weight. Some are richer than others and may be able to spare a little to bring the others to fruit bloom. Be sure and let none of your colonies starve.

Let us bear in mind that we should secure strong colonies for the honey crop, or, as Mr. Demuth so happily put it: "We must raise our working force **for the honey crop, and not on the honey crop.**" It takes about 35 days for the egg just laid to become a field worker. So the breeding of the bulk of our colonies should be

gin on a large scale at least 35 days before the usual honey crop begins.

Let us avoid raising drones, except in the colonies which we desire as reproducers. We can go back a great many years and find some of the best teachers in agreement with us on this point. Samuel Wagner, the early pioneer and founder of the American Bee Journal, wrote in April, 1861:

"The beekeeper's effort should constantly be directed to the suppression of drone-brood, for notwithstanding his utmost vigilance, there will be always many more drones produced in his apiary than are needed—unless queen-raising be a principal part of his business. Where honey is his object, he should sedulously foster the rearing of workers, so that, at the favorable moment, when pasturage is abundant, he may have at command a numerous body of energetic laborers, instead of having his hives crowded with a horde of worthless consumers."

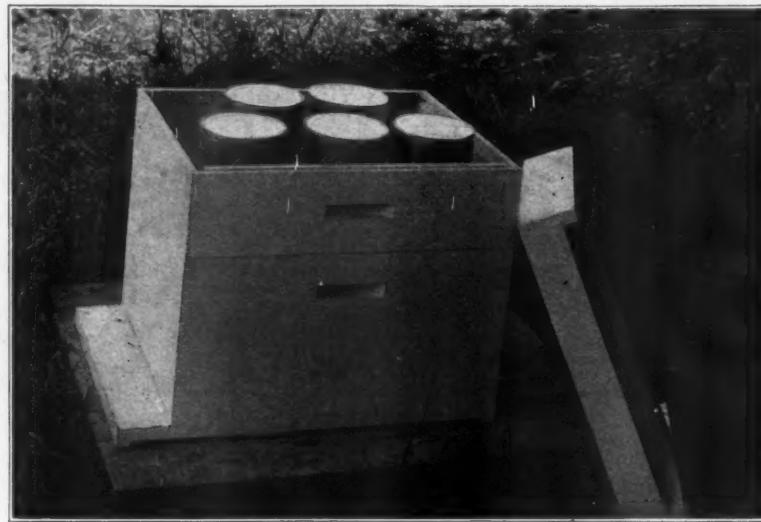
Since the invention of comb foundation, there is no excuse in rearing a large number of drones, except in the hives in which we choose to have them. We will always have a few, even in hives where we try to prevent their production. But 200 to 300 drones in a hive is a trifle. It is the production of thousands which is a waste. Let us prevent their coming by the very practical method of removing as much as we can of the drone comb, in early spring, before they are produced, and replacing it with worker comb. We should always have some worker combs on hand for emergencies.

Beekeeping is a business of details. Let us attend to the details. Learn what is to be done, and do it in time.

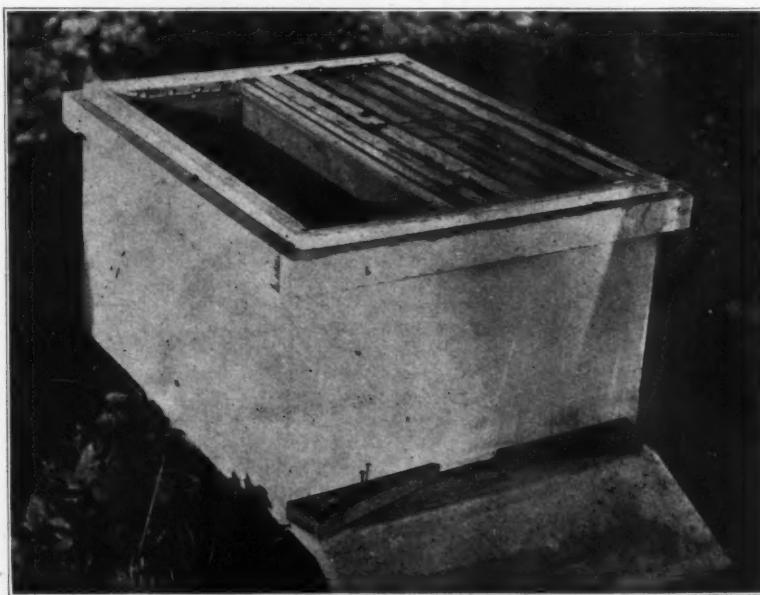
Saving a Weak Colony in Spring

By F. Dundas Todd

SEVERAL times in the past ten years I have tried to save a weak colony in spring by the Alexander method, but invariably without success, so I became convinced it was not for me. Last spring,



Tin pail feeders in empty super. The best method of feeding syrup.



Weak colonies can be confined to six frames in early spring by the use of a tight-fitting division board.

at the first examination, about the end of April, I found two colonies that had no more than 150 bees apiece to support the queen. One had plenty of stores, but the other was starving. As the honey production of both colonies the previous year had been good, I felt I ought to try to save the queens. Now, I see my own bees on Saturdays, and usually leave the apiary about 4 or 5 o'clock, so I had to fit myself to the conditions. I decided to place each of the weak colonies above a strong one with wire mosquito netting between, this being supported on a queen excluder. This was done, and a frame with a small batch of sealed brood, but no adhering bees, given to each. The one short of stores was provided for by giving it a frame with honey. No provision was made for flight.

The following Saturday I found many of my old bees had died, but as many young ones had hatched out. I gave each another frame of sealed brood; this time from the hive below. A week later, feeling that the odor of the hive would be uniform, I carried each old hive to a new stand and left the upper story with another frame of brood and adhering bees on the old stand to catch the flying bees.

The queens were saved all right, and I wish I could add that each colony gave me a bumper crop, but they did not; in fact they did not even get winter stores. The season was very dry, poor for building up, and as strong nuclei made no better showing, I am not in a position to blame the queens. The longer I keep bees the less inclined I get to bother with weak colonies, so prefer to put them out of business and get them off my mind. Not alone in the bee world have I seen brands plucked from the burning that, so far as their usefulness was concerned, were not worth the bother.

A Bee Fence

Where apiaries are kept close to machine-worked fields there is frequently complaint that the bees sting the horses when at work. The best way to avoid such trouble is to have a high fence to compel the bees to rise high in the air when leaving the apiary or returning with their loads. The picture shows an arrangement used by Herman Rauchfuss, of Colorado. He has woven brush into the barbed-wire fence beside the apiary, with the result that the bees pass over the teams in the adjoining field at such a height that there is seldom any annoyance to the horses.

The National Meeting

The National Association met at Buffalo, March 9-11, approved the action of the Kansas City meeting of January 6, organizing an "American Honey Producers' League," and dissolved itself after voting to merge the Association into this League. Previous to this action it approved the decision of the Association of New York Societies, which also joined the League.

We trust that those who are inclined to criticise the organization of an "American Honey Producers' League" will read its contemplated functions in the "League Bulletin," which is being sent freely throughout the country. Like the citrus fruit men, the honey producers of America need to brace against each other, and it is not sufficient to organize local or state honey producers' associations. These must be connected with each other, though independent from one another, in order to secure the benefits of union.

This is not the first time that the honey producers try to join hands. Other attempts have been failures. But we are getting nearer and nearer

to the goal. If this should fail, another would take its place shortly. So do not pass it by without careful investigation. Information can readily be secured by addressing the Secretary, Chas. B. Justice, 318 Investment Bldg., Los Angeles, or E. G. Le Stourgeon, President, San Antonio, Texas.

Wisconsin's Crop

The Wisconsin Crop Reporting Service estimated that there were produced in Wisconsin in 1919, 4,834,000 pounds of surplus honey, of which 18 per cent, or 826,000 pounds, was comb and 4,008,000 extracted. This is an average of 54 pounds per colony, comb honey yielding 34 pounds per colony and extracted 61 pounds. Of the 90,000 colonies in the State in 1919, 37 per cent, or 24,300, were used in the production of comb honey and 73 per cent, or 65,700 in the production of extracted honey. The census of 1910 reports 95,638 colonies. This number decreased rapidly until within the last few years, but the culture of bees is rapidly increasing at the present time.

The total value of the 1919 honey crop of Wisconsin is estimated at \$1,207,730, of which \$261,842 is for comb honey and \$945,888 for extracted. Average price received by producers of comb honey was 31.7c per pound; of extracted, 23.6c per pound. On January 1 the average price of comb honey was 32.6c; of extracted, 24.8c.

The average value per hive of bees is estimated at \$8.50, a total value of \$765,000 for the 90,000 colonies in the State.

KENNETH HAWKINS.

Premiums to be Offered at Mid-West Horticultural Show

We learn from Professor Paddock that beekeepers will be recognized by the management of the next Mid-West Horticultural Show, to be held at Council Bluffs, Iowa, next fall. Special premiums will be offered for county association exhibits. Since the Mid-West is one of the biggest exhibitions of fruit to be held in America, it is a very favorable opportunity for the beekeepers to bring their product to the attention of the public. Beekeepers can do no better advertising than by well arranged exhibitions at fairs, etc. By making plans early in the season it is not difficult to prepare an effective exhibit. If the beekeepers of the Middle West respond with a display worth while this year, it is probable that larger premiums will be available later.

Large Hives

"With the little British Beekeepers' Association frames, two brood chambers are essential to secure a really effective working force of bees at the right time. The other way is only playing at beekeeping."—S. H. Smith, of Cambridge, England, in "Intensive Beekeeping for Honey Production."



Brush woven into a barbed-wire fence to compel the bees to rise above the surrounding fields. Annoyance to horses working in the fields near the apiary can often be prevented in this manner.

AMERICAN BEE JOURNAL

Established by Samuel Wagner in 1861

The oldest Bee Journal in the English language.

Published monthly at Hamilton, Illinois.

Entered as second-class matter at the postoffice at Hamilton, Illinois.

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All subscriptions are stopped at expiration. Date of expiration is printed on wrapper label.

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THE STAFF

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MAURICE G. DADANT Business Manager

our contributors, on behalf of our suffering friends across the sea.

March 10, 1920.

In Australia

The December number of the "Australian Beekeeper" is very interesting. Those "Anzacs" are progressive. They read our books and our magazines, while we barely think of them as existing at all. So it seems they would get ahead of us some time. Those of our readers who have followed the articles on "Bee-keeping in Australia," by Tarlton Rayment, in the American Bee Journal, have found out that country, in some parts at least, is a bees' paradise.

It is quite interesting to read of bees swarming in December and going into winter quarters in June, for they have their winter when we have summer, and vice versa. We wish our Australian cousins good crops.

Good Samaritan and Other Funds

At the Buffalo meeting, a letter was read from C. W. Aeppler, of Wisconsin, enclosing another from the editor of "Des Bienenvater," of Vienna, Austria, stating that they were on the verge of starvation and begging for food orders, to be sent from America. It is now possible, through the management of Hoover, to send orders for a number of different articles of food, to starving Vienna. The appeal stirred the generous feelings of the members present at the meeting, not only towards our late enemies, the Austrians, but also towards the Franco-Belgian. The writer was appointed a committee of one to receive the subscriptions, and a fairly long list was made on the spot.

We will not give the detail of the remittances this month, for lack of room. Suffice it to say that the amounts subscribed there and received also through other channels have enabled us to send a draft to the Franco-Belgians for an additional sum of 1,525 francs. Four \$10 food orders have been secured for the Viennese editors, Messrs. Alois Alphonse and Franz Richter, of the "Bienenvater."

A subscription of \$52 was received by Dr. Phillips, from the Riverside County Beekeepers' Club for the Good Samaritan Fund, and more is promised. More is also coming from different sources. Let the good work go on.

THE EDITOR'S VIEWPOINT

Caucasian Views

Some of our new subscribers ask how we manage to secure, under present conditions, views of apiaries and bee transportation in the Caucasus, such as were shown on our cover page in March.

In 1917, just before the United States entered the world war, we received, as a compliment, from the Caucasian Beekeepers' Association, with headquarters at Tiflis, an album of some 50 views of apiaries of old and new style. The professor who sent them to us, C. A. Gorbatcheff, stated that they wished to show us, not only the progress being achieved, but also the different styles of hives which would soon be abandoned and would then have only an ethnographic interest for the modern beekeeper. We have already given a number of these views, but still have a number to give, thanks to the courtesy of the Caucasian Beekeepers' Association.

These views cover beekeeping in the provinces of Daghestan, Elizabethpohl, Baku, Kutais, Chernomoskaya, Tersk, Batum, Lenkoran, Erivan and especially Tiflis, all in the Caucasus.

The war has sadly upset communications. Copies of the American Bee Journal, mailed to Professor Gorbatcheff in 1918, and since that time, have been returned to us on account of the impossibility of delivery. It is time that commercial and literary exchanges be again resumed, with the entire world.

Selling Honey

Our readers will find in this number the account of a remarkable selling campaign, in which 158,000 pounds of honey was sold, through the New York Globe. This was extracted

honey, granulated. We did not insert this for the purpose of urging beekeepers to follow this method, for if it were followed the jobbers would stop handling honey and we would be forced to sell all our honey in that way, which is out of the question. We need the jobber and the retailer. But the account of this remarkable sale gives clear evidence that there is ample room in America for all the honey we can produce, granulated honey at that, and that the only requirement is proper distribution.

Good Samaritan Fund For Franco-Belgian Help

Total of previous lists	\$618.60
Wm. Sandoz, Peters, Neb.	2.50
J. B. Holsinger, Johnstown, Pa.	1.00
Harold Current, Dunkirk, Ind.	1.50
A Beekeeper, Minnesota	2.00
Mrs. C. O. Bruno, Rockford, Ill.	1.00
Harry J. Nelson, Ames, Ia.	5.00

Total \$631.60

Received later—W. M. Mallory, Batavia, N. Y.	\$10.
Henry C. Nichol, St. Paul	1.00
H. L. Hart, Yakima, Wash.	5.00
A. Etienne, Ottawa, Ill.	1.50

Shortly before the issue of our March number, a request came for the sending of the funds at current exchange rates, so the exchange was made and the money sent. It brought, all told, 8,548.37 francs. It was forwarded at once.

At a similar rate of exchange, the goods subscribed and the queens would figure up about 13,500 francs, making a grand total of near 22,000 francs.

We will expect to make some statements as to the use of the goods and money, when the European committee can give them to us. We thank

A Remarkable Selling Campaign

How a New York Newspaper Has Sold 79 Tons of Honey in Sixty-Pound Cans Direct from the Car to the Consumer.

ONE of the most remarkable campaigns for selling honey direct to the consumer has recently been carried on by the New York *Globe*. Since the memorable shipment of ten cars of honey by the late J. S. Harbison from his apiaries in California to the New York market in 1876, there has been nothing to equal it in calling the attention of the public to the value of honey as food and to disabuse the public of the prejudice against honey in the candied state. A few such campaigns would create a market for honey in sixty-pound cans that would take the present supply direct to the consumer in the most economical way possible. This campaign has resulted in hundreds of families getting a liberal supply of honey at practically the wholesale price, while the producers have been able to sell direct at a saving. Of course no account has been made of the cost to the newspaper conducting the campaign. The good will of the readers of the publication will probably be considered a sufficient compensation.

Alfred W. McCann, a member of the staff of the New York *Globe*, met a beekeeper, Joseph J. Anderson, of Idaho, once upon a time. Just how this chance meeting led to the distribution of honey by the carload, to the readers of the paper to which McCann is attached, is a mere matter of detail. It is sufficient to state that McCann is a newspaper man with a vision. When the recent scarcity of sugar, or manipulation of the market, or whatever cause raised the price to unheard-of levels, the New York newspaper man remembered his honey-producing friend in the far west. Two and two sometimes make more than four. In this case a newspaper with a vision and a beekeeper who was alive to a real opportunity saved the consumers of New York City several thousand dollars on the price of several cars of the finest white honey, and incidentally demonstrated the weakness of our present system of distribution.

On the front page of the *Globe*, on January 5, appeared an announcement that candied honey from Idaho, in sixty-pound cans, would be delivered to consumers within fifteen miles of the city hall in New York City, at 23 cents per pound, the price at which sugar was then retailing. Within five days orders were received for more than forty tons of honey. The man who says that the consumer will not buy, except in the small container, has another guess coming. The New York *Globe* has demonstrated that the consumer will buy in larger quantity if we make it to his interest to do so. We quote the following from that publication under date of January 10:

"It is time the honey industry appreciated the fact that, as now conducted, the honey business itself is the greatest enemy of the bees and beekeeper.

"Nothing so discourages honey consumption as the profiteering prices at which, in silly little glass packages, this most delectable of all sweets is peddled out to the consumer. Nothing so encourages the manufacturer of substitutes.

"What a lesson to the honey trade! If people will buy 84,240 pounds of honey in sixty-pound tins in three days, how much honey do you think would be bought if it could be obtained in ten, or even twenty-pound tins?

"Everybody cannot buy sixty pounds of honey, and I am thinking of the millions of buyers who are deprived of a share in this orgy of innocent delight for no other reason than their inability to afford such luxury in wholesale lots. It is a crime to keep them from generous quantities of pure candied honey at a decent price solely because the honey packers make their 300 per cent profit by converting the solid honesty of the comb into a fluid, artificially achieved, that can be sold at absurd prices in petty little dribs through the instrumentality of glassware that subsequently finds its way to the dump.

"The whole system is wrong and the *Globe*'s extraordinary experience in connection with the enthusiastic response of honey lovers to the opportunity now presented demonstrates the incalculable benefits to be derived by the public through the agency of common sense merchandising.

"Hundreds of millions of dollars could be saved annually by the general adoption of this method of distribution in the sale of food necessities. The saving in money would be insignificant in importance compared with the general improvement in public health that would inevitably follow.

"Millions of children today consume the craziest kind of table syrups in enormous quantities simply because they are supposed to be cheap as compared with the price of honey. Yet honey, if honestly sold to the plain people, would be even cheaper, despite its infinite superiority, than any chemical contraption ever compounded.

"Every now and then, as things now go, the average child participates in a few teaspoonfuls of the contents of a little five-ounce tumbler of honey costing all the way up to \$1.50 a pound. If the price were what it should be, instead of a few teaspoonfuls once in a while, the growing child would eat regularly big, white, sticky chunks of pure candied honey, obtaining at least three times as much as can now be purchased in fancy, inedible glass containers, at the same price—three times as much and twice as good."

There seems to be no limit to the amount of honey the public will buy if it is offered in convenient form at

an attractive price. Through the kindness of readers of this *Journal* we received several copies of the New York paper and were thus kept informed as to the progress of the campaign. The issue of the *Globe* dated February 5, just a month later than the first received, stated that 158,000 pounds, or 79 tons of honey had been sold direct to consumers in sixty-pound cans. If it had been available in ten-pound cans the quantity would have been greatly increased, but 60 pounds was the smallest quantity offered to any purchaser. Since the delays in delivery through storms and other contingencies made it impossible to secure delivery of the cars as expected, hundreds of consumers were unable to get their orders filled. Some orders had been received together with cash in payment more than a month before the honey arrived from Idaho.

A final feature of special interest was the distribution of 16,000 pounds of honey by the *Globe* to 26,668 orphans, waifs and other poor children, many of them blind and crippled. This latter amount represented the profits of the newspaper on the transaction, and hundreds of little children who had never before tasted honey had the treat of their lives.

The beekeeping industry owes a vote of thanks to the New York *Globe* and to Alfred W. McCann for demonstrating that the public is ready to buy honey in quantity and that people are not afraid of candied honey when its real nature is explained to them. Joseph J. Anderson is to be congratulated upon his prompt co-operation with the newspaper which has resulted in a demonstration of a practical way to sell honey in quantity, direct to the consumers. If co-operative organizations of large producers will act upon this suggestion there will be no trouble in disposing of next year's crop at a profit to the producer and a big saving to the customer. F. C. P.

An Interesting Distinction

Mr. Ernest E. Kirkham, of North Carolina sends us an interesting circular describing a remedy which he recently found on sale at a village store. The "Hayes Healing Honey Compound" is said to contain a number of valuable ingredients, including "Wild Bee Honey." The circular states as follows regarding this honey:

"The honey made by the wild bee is very dark in color and is gathered from wild flowers, while the domestic or home bee gets its honey from garden flowers. Physicians have discovered that the wild bee honey can be eaten by a diabetic patient when ordinary domestic honey or sweets must be avoided."

Although we have heard many ridiculous statements regarding bees and honey, this is certainly a new one.

PRODUCTION OF EXTRACTED HONEY

An Account of the Methods and Equipment for Extracted Honey Production in Use by Some Well-Known Colorado Beekeepers

By Frank C. Pellett.

IN our November number, comb-honey production under Colorado conditions was discussed somewhat at length. Not all Colorado beekeepers produce comb honey, however. There are several men engaged in the production of extracted honey on a large scale. Considering the fact that the markets have favored the production of extracted honey for the past few years, one wonders why more of the big beekeepers are not engaged in producing extracted rather than comb honey. Colorado beekeepers have developed the first selling organization for handling honey which earned large success. This is perhaps due to the fact that there are a larger proportion of the beekeepers of that State engaged on an extensive scale than is the case elsewhere and that most of their product is sold in distant markets. Such conditions discourage individual marketing. The honey sent out by the association is uniformly graded and bears a good reputation in the eastern markets.

In visiting eastern markets the writer has occasionally heard of a shipment of comb honey from some point in Colorado which has granulated in the combs. Granulated comb honey is a difficult product to move, and for a time it was a mystery why the comb honey from some localities should granulate so very quickly. In many places in that State the gum-plant or rosin-weed (*Grindelia squarrosa*), is common. The honey from this plant granulates very quickly, sometimes even before it is removed from the hive. There are few reports of much surplus from this plant, but it is usually mixed with honey from other sources. Where a little gum-plant or rosin-weed honey is mixed with the crop from alfalfa the whole is likely to candy in the comb before

it reaches the consumer. The honey from gum-plant is yellow and of inferior quality. At the Association grading stations its presence is likely to be discovered, but small shipments from isolated locations occasionally reach the market. If the writer were in a gum-plant location he would certainly produce extracted honey rather than be subject to the annoyance of constantly watching to avoid the spoiling of the grade of a nice crop of comb honey through the mixture of a little nectar from this plant.

One prominent comb-honey producer spent considerable time and money in making over comb-honey equipment for the production of extracted honey last year. After pro-

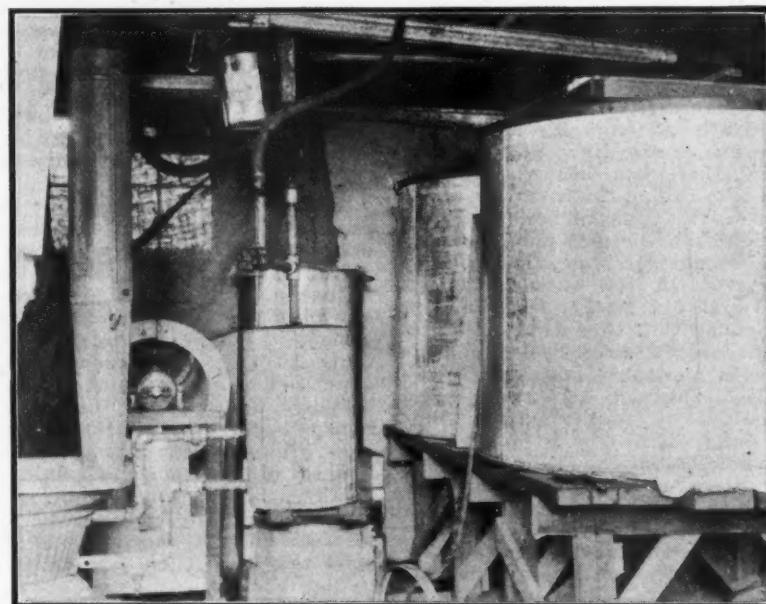
ducing one crop he is now spending time and money to fix it up for comb honey again this season. Some men who are experts in the production of comb honey can never be quite content with anything else. On the other hand, men who are eminently successful in producing a fine article of extracted honey are not interested in honey in sections.

Up-to-Date Equipment

At Loveland and Fort Collins are several beekeepers with the latest equipment for extracted honey production on a large scale. At Loveland I called on J. C. Aikin, brother of the late R. C. Aikin, who was a well known contributor to the bee magazines of the past. M. Aikin and his son who had recently returned from the army, very kindly took me in their car and we drove out to see the beekeepers near by. After a short visit with Homer Lovesee, a former Iowa man who has about 100 colonies in town, we went to see K. E. Sutton, who has several hundred colonies in outyards around Loveland. We found Sutton and his crew hard at work extracting which gave us an opportunity to study his equipment in operations.

His honey house is 16x32 and has the word "Honey" painted across the front for the full length. This can be seen from the main road for a distance of about a mile. A sign board has been erected at one end to make room for the word "Eat", so that it now reads "Eat Honey", as will be seen by the accompanying picture.

The building is provided with a



Settling tanks in basement of Sutton's honey house.



Sutton's honey house and sign.

basement under the full structure. The engine for furnishing the power, stove for heating capping melter and furnishing heat, and storage tanks are all in the basement. On the upper floor there is a small storage room heated by steam pipes from the same stove that heats the capping melter. The extracting combs are stored in this room as they are brought from the apiaries. The heat prevents granulation of the honey before extracting and at the same time keeps the combs sufficiently warm to insure that the honey will run readily when the combs are placed in the extractor. Near the door to this store room is the capping melter and near this the extractor. The arrangement is designed to save every possible step of the operator when extracting. The capping melter is Mr. Sutton's own design and unlike those on the market. It is made with a double bottom with the space between filled with water. The ends are closed and it has a pipe drain. A steam pipe from a laundry stove in the basement furnishes the necessary heat, while the exhaust pipe runs through the warming room. Over the capping melter is a comb rack for holding the combs as they are uncapped. Under this rack is a sloping tin to carry off the honey that drips from the combs and at the same time to protect the combs from becoming too warm from heat rising from the melter.

The honey runs directly from the extractor to tanks in basement without handling. There are 200 gallon storage tanks, from which the honey is drawn into 60 pound cans. From the extractor it passes through a coarse screen and then through a cheese-cloth strainer which is suspended above the tanks and which affords a large surface for straining. The second picture shows the tanks and the pipes that run from the stove to capping melter and warming room above.

Now that labor is getting scarce

and high it is important that the bee-keeper who builds an extracting house plan it so as to eliminate all the labor possible. The mere arrangement whereby the honey runs directly from the extractor into the tanks, thereby saving the labor of drawing it from the extractor in buckets makes a big saving in handling a large crop. If the building is so arranged that one operation follows another from one side of the room to the other without unnecessary steps, it is possible for a man to handle a great many more combs in a day than where no attention is given to arrangement.

At Ft. Collins, A. A. Lyons has probably the largest extracting and storage house for extracted honey in the State. The building is about 50x56 ft. in size, is made of concrete and fireproof throughout. The rooms are separated from each other by fireproof walls. It is built in a hillside with entrance to upper floor on one side and to the lower floor on the other. At one side of the house there is a platform for unloading extracting supers directly through a door into a warming room. This

room is long and narrow with a small track on which runs a truck for carrying supers to the extracting room through a door at the opposite end. The heating room holds from 250 to 300 full depth extracting supers. In fine weather he can thus take off enough honey ahead of the extractor to keep the force busy should there be a rainy day. In the extracting room there are two 8-frame power extractors driven by electric motors. These are shown in the picture. Next to the extracting room is a large room for storing empty combs. This room opens again on the platform, where the truck loads and unloads. The capacity of the plant is 100 to 150 cans a day with two men and a boy to operate.

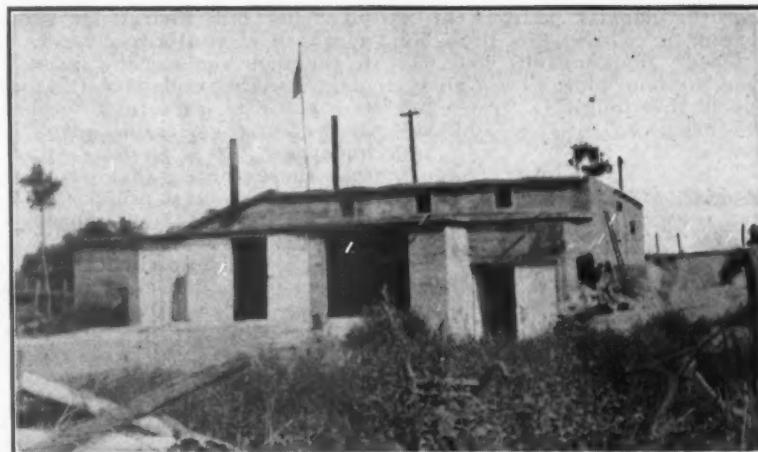
In the basement is one large honey tank and two smaller ones for storage. The combined capacity is six thousand pounds. The honey is drawn into cans as fast as it settles. An alarm indicates when a can is filled and ready to be sealed.

Under one roof there is ample room for every operation, with storage facilities for extracting supers of filled combs, empty combs and cans of honey ready for market. There is a wax room 16x24, with a steam boiler for heating the building and for extracting the wax from old combs. At the back is a garage for the Dodge truck, a light truck and the family pleasure car.

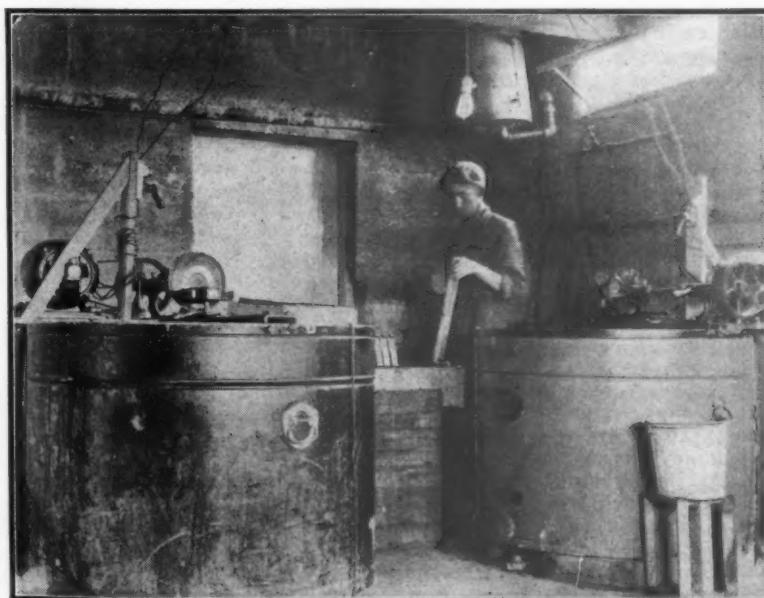
Honeydew

By Alex. D. MacGillivray
(Continued from March)

Boussingault believed that the production of honeydew was a disease of the plant. He extracted, according to Buckton, 26.7 grammes of sugar, cane sugar, inverted sugar and dextrose from one square meter of the diseased leaves of a lime tree; while the same amount of leaves from an unaffected tree, that is one not bearing insects producing honeydew, growing not far away, gave only 4.4 grammes. This would seem to show that the honeydew must be much richer in sugar than the sap extracted from the leaves. To secure such an increase in sugar, it would seem as if the sap of the plant must undergo elaboration within the body of the in-



Lyons' honey house at Ft. Collins.



Interior of Lyons' honey house at Ft. Collins, showing two large power extractors operated by electric motors.

sect, and the globular enlargement of the rectum is where this probably takes place. Boussingault, who has analyzed the honeydew with a polarizer, gives the following result for samples examined in July and August:

	July	August
Cane Sugar	48.86	55.44
Inverted sugar	28.59	24.75
Dextrine	22.55	19.81
	100.00	100.00

When the sugar content of honeydew is taken into account, it is not strange that ants, wasps, butterflies, moths and bees of many kinds, including the honeybees, should seek it for food. The western Indians were also aware of the sweetening properties of this substance, since they collected the leaves that were thickly coated with honeydew, washed them off in water, and boiled down the water, producing a crude brownish sugar resembling an inferior grade of maple sugar.

The honeydew is evidently accumulated in the globular portion of the rectum in most species and extruded as a minute bubble. There is considerable variation in the impetus that leads to the freeing of the bubble. It is likely that in many species it is simply the pressure of the excretion upon the walls of the rectum, but in others the insect may be led to give up its excretion by the stroking of its abdomen. This is particularly true of the plant lice and certain scale insects. These insects are generally attended by ants, which gently stroke the back of the plant louse with their antennae, and are rewarded with a small drop of honeydew. This may be repeated, and the plant louse may give up more than one drop, but as a rule, the ant, after receiving one drop, passes to another individual and repeats the stroking of the back. Time must elapse, in the case of most individuals, before a second drop can be discharged. In some plant lice that do not produce much honeydew the anus is surrounded by long hairs for holding the drop of honeydew after it is extracted, and so it will not be lost.

Practically all flowering plants are infested by honeydew-producing insects. The great majority of these are different species of plant lice. Most of the species live upon the exposed surfaces of the plant, others live upon the roots, and still others produce galls upon the leaves or buds in which they live. The root inhabiting and the gall inhabiting species produce only a negligible amount of honeydew, while those species that live exposed on the leaves, usually on the under surface, where the outer covering of the leaves is more delicate, produce great quantities. The plant lice are fixed in position and those that live upon the leaves, because of their sedentary and gregarious habits, are exposed to the attacks of many enemies. It is a well-known fact that certain species of ants protect the plant lice and they are often figuratively described as their cows. The ants drive away enemies, build sheds over them, and may carry the

plant lice into their nests upon the approach of winter and return them to the plant again in the spring. The plant lice, in return for this protection and care, excrete at the bidding of the ant considerable quantities of honeydew. It is an interesting fact that those species that live exposed and need the most protection should produce the greatest quantity of honeydew. There is, as Wheeler states, a symbiotic (living together.—Editor) condition existing between the two kinds of insects, while one kind is not wholly, it is in great part, dependent upon the other, and it is not unlikely the development of the honeydew-producing ability of the exposed species has been increased from the protection received from the ants.

When the insects are not attended by ants, the drop of honeydew instead of being gently extruded so that it can be seized by the ant, is extruded with a jerk, so as to throw it some distance beyond the body. The drop is carried into the air and alights upon the upper surface of a leaf below or upon the ground. If the colony of insects is large and the amount of honeydew produced is considerable, so that there is much more than the attending ants can use, the upper surfaces of the leaves become spotted, or more frequently covered, with the honeydew that is thrown into the air. The surfaces of the leaves have a glossy appearance, as if they had been varnished. When the production of honeydew is of considerable volume, it may drip from the tips of the leaves, and to one standing under the tree give the effect of a shower of rain. The raining of honeydew from trees has been reported so many times by different observers that it cannot be considered an unusual phenomenon. It is at such times that honeybees collect honeydew in enormous quantities, producing honey of an inferior quality.

When one considers the raining of honeydew and its production in mass, one is immediately led to the conclusion that each plant louse must produce a large volume of honeydew. Busgen, who has studied this matter exhaustively, showed, however, that a single plant louse on maple produced only forty-eight drops in twenty-four hours, a single plant louse on linden nineteen drops, one on a different kind of maple nine drops, and one on rose only six drops. Since Busgen made numerous counts of the number of drops produced, there is no question that the amount produced by each individual insect is very small.

In order to appreciate how such a volume of honeydew can be produced as has been described, the number of individuals engaged in its production must be realized. The insects that produce honeydew are of such size that several hundred might be colonized on the under side of a single maple leaf. Fifty ordinary sized plant lice would not fill a teaspoon of average size. The often-quoted statement of Huxley is that the produce of a single plant louse in the course of ten generations, supposing all indi-

viduals to survive, would weigh more than five hundred million of stout men, that is, they would weigh more than the entire population of China. Such an idea seems preposterous. But Buckton, a prominent English student of plant lice, offers the following calculation. For the sake of simplicity the calculation assumes that each plant louse lives twenty days and that at the end of this time each plant louse shall have produced twenty young. It should not be forgotten that many individuals may live more than twenty days and produce more than twenty young and that each begins to produce young at the age of five days. Then, at the end of twenty days, there would be produced twenty individuals; at the end of forty days, 400 individuals; at the end of 100 days 3,200,000 individuals; at the end of 200 days, 10,240,000,000 individuals, and at the end of 300 days, 32,768,000,000,000,000 individuals. If it is assumed that 1,000 plant lice weigh one grain, and a stout man weighs 2,000,000 grains, then the weight of a single man would be equal to that of 2,000,000,000 plant lice, and the weight of the descendants of the single plant louse at the end of 300 days would equal the weight of 16,284,000,000 men, or several times the weight of the entire population of China. If you will examine the buds of an apple tree during the winter season, you will find around each terminal bud from one to six or more minute black globular objects. Each of these is the egg of an aphid. If you were to count the number of terminal buds on a full grown apple tree and then estimate the number of plant louse eggs borne by the tree, you will have some idea of the possible number of plant louse inhabitants of this tree next spring. Then just imagine that each of these eggs should produce a stem mother each with a number of descendants such as calculated by Buckton, and I can assure you that this calculation is much below rather than above the actual number. I think you will agree with me that there would be no room in this world except for plant lice, and even if each individual was producing only ten drops of honeydew in each twenty-four hours, not only the other inhabitants, but the plant lice themselves would be drowned in the volume of honeydew produced. This calculation is given in order to make the reader appreciate the enormous number of individuals that may be produced. It is not known how many of the individuals of each generation will survive, but there is a vast army of predacious and parasitic insects who make it their main duty to destroy and hold in check the overdevelopment of plant lice. Suppose only one per cent of this innumerable host survived and produced honeydew, is it strange, when the number of survivors is slightly increased, either through favorable conditions for the development of their enemies or favorable weather conditions for the production of plant lice, that it should not be an unusual occurrence to have trees actually raining honeydew?

tion has been promised. Of course, sugar prices will advance. Since November 1, the price of industrial sugar in carload lots has increased from 150 Fr. per 100 Kg. to 200 Fr."

These figures, in our money, would read an increase from 15.6c per pound to 19.5c per pound. It might be worthy of note that Swiss beekeepers are buying sugar at present for about the same price that we are, and the hard thing to comprehend is—why? No sugar is produced. The question still remains unanswered: Why are we paying such exorbitant prices in the United States at the present time? It would be interesting to know just how many millionaires have been created from the sale of high-priced sugar.

Wisconsin.

Bee Pasturage

By J. H. Paarmann

HAVING recently entered into partnership with a number of colonies of bees, they have appointed me assistant manager of their supply department. In this capacity I am making an inventory of their available sources of raw materials in and about the city of Davenport, Iowa, as well as a report upon the time of year when supplies may be withdrawn from the storehouses. I accordingly kept daily watch of our flowers, wrote down the names and took a photograph of all that were patronized by bees, marked (*) those that seemed to yield mainly pollen, and (†) such as were visited by very many bees. This list shows only the more common plants of which I kept records during the 1919 season. Some common pollen plants, as corn and ragweed, and such honey plants as horsemint, should, of course, be included in a complete list, and such plants as pear and apple should receive more emphasis, but I am telling only what I found in repeated observations during this one season. Other seasons would give other results. Some days, I'll admit, the observer was doing useful work in the beeyard

when he ought to have been watching the flowers.

To help identify unfamiliar plants, their Latin names are added, as in Gray's New Manual, 7th edition. Only such illustrations are used that have not previously appeared in the Journal.

The blooming periods, as given, refer principally to the level land beyond the bluffs. Down in the valley and on south slopes, plants bloom a week earlier and on north slopes a week later than here shown.

I. Last week in March until middle April (dandelion until middle May and again in late fall; ash trees until middle May).

Acer saccharinum, *soft maple.
Ulmus americana, *American elm.
Salix sp., *†pussy willow.
Taraxacum officinale, †dandelion.
Populus deltoides, *cottonwood.
Acer negundo, *box elder.
Fraxinus spp., *ash, various species.
**Tulip*.
II. Last half of April (plum begins

earlier; apple and pear bloom until middle of May).

Plum, cultivated.

Cherry, cultivated.

†Gooseberry, cultivated.

Crab, cultivated.

Apple and pear, cultivated.

Betula nigra, river birch.

III. First half of May (barberry blooms a week longer).

Malus ioensis, †western crab apple.

Crataegus mollis, †Hawthorn.

Berberis Thunbergii, †Japanese barberry.

IV. Last half of May and early June (white clover until August 1; roses until July 1).

Lonicera tatarica, †tartarian honeysuckle.

Lonicera hispida, †honeysuckle.

Lonicera Morrowi, †Morrow's honeysuckle.

Quercus spp., *Oaks, various species.

†Flowering crab, cultivated.

Acer negundo, box elder (honeydew on leaves).

Aesculus hippocastanum, horse chestnut.

Prunus serotina, wild black cherry.

Spiraea Van Houttei, "Bridal wreath."

Weigelia rosea, weigela.

Trifolium repens, †white clover.

Melilotus officinalis, yellow sweet clover.

Hicoria spp., *hickory, various species.

Rosa spp., *roses.

Viburnum lentago, †sheepberry.

Viburnum prunifolium, †black haw.

Aquilegia canadensis, wild columbine.

Robinia pseudacacia, †black locust.

Deutzia Lemoinei, †Lemoine's Deutzia.

V. First half of June (red raspberry begins a week later than black raspberry; alsike blooms until late July).

†Black raspberry, cultivated.

Philadelphus coronarius, †mock orange.

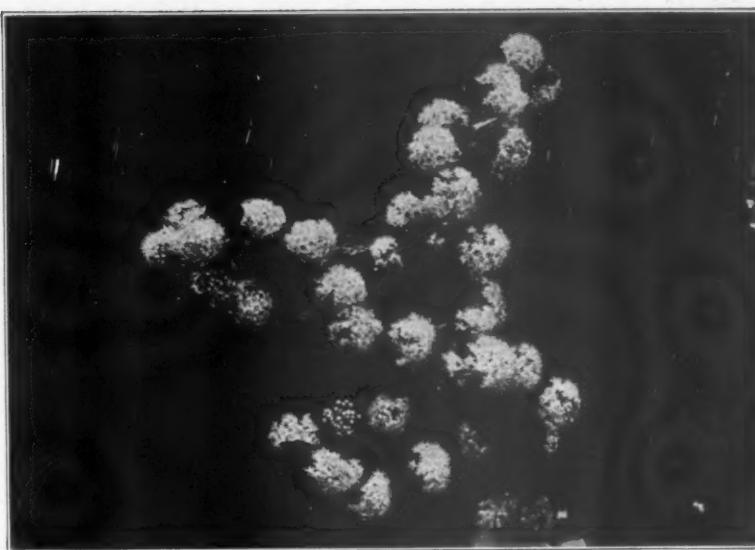
Red raspberry, cultivated.



Blossoms of Culver's Root, *Veronica virginica*.



Sheepberry, *Viburnum Lentago*.

Blossoms of ninebark, *Physocarpus opulifolius*.

Physocarpus opulifolius, ninebark.
Liriodendron tulipifera, †tulip tree.
Trifolium hybridum, alsike clover.
 VI. Last half of June and early July (white sweet clover until middle of September).

Melilotus alba, †white sweet clover.
Ligustrum Regelianum, †Regel's privet.

Leonurus Cardiaca, †motherwort.
Tilia americana, †American linden.
Rhus glabra, sumac.
Sambucus canadensis, elder.
 †Onion, cultivated.

VII. July (milkweeds, muskmelon and matrimony vine bloom well into September).

Muskmelon.
Eleagnus sp., Russian olive.
Asclepias spp., milkweed, various species.

Cephalanthus occidentalis, †button-bush.

Veronica virginica, Culver's root.
Pedera quinquefolia, Virginia creeper.

Monarda fistulosa, wild bergamot.
Spiraea salicifolia, meadowsweet.
Lycium vulgare, †matrimony vine.
 VIII. August and early September.
Gaura biennis, biennial gaura.
Nepeta cataria, catnip.

Verbena spp., vervain, various species.

Cassia chamaecrista, partridge pea.
Echinocystis lobata, wild balsam apple.

Carduus discolor (?), field thistle.
Polygonum spp., †smartweed.

IX. September (first seven begin in late August; last five bloom until frost).

Helianthus spp., sunflower (wild).
Solidago spp., goldenrod, various species.

Eupatorium serotinum, late-flowering thoroughwort.

Eupatorium aterrima, white snakeroot.

Veronica fasciculata, ironweed.
Sicyos angulata, one-seeded bur cucumber.

Bidens frondosa, bootjack.
Helenium autumnale, sneezeweed.

Aster ericoides, frostweed aster.
Aster novae-angliae, New England aster.
Aster spp., other species of aster.
 Iowa.

Which Queen Cells Are Destroyed?

I WONDER if Dr. Miller and I are not at cross purposes, or at least if we are not overlooking something. Since reading his comments on the subject it occurred to me that it makes a big difference where the cells are located in the hive. A colony of bees is far from always being a unit.

It takes a very little change in the arrangement of their internal affairs to cause many sundry and unusual reactions. Here is an example:

Some years ago I put a very old, rubbery and mouldy comb in the middle of a strong colony containing a choice imported Cyprian queen. Some weeks later in looking over that colony I was much disturbed to find a nice young queen at work. A little further inspection showed the old comb about as it was when put in. The next comb beyond it showed laying workers busy, cells with many eggs, some capped drones in worker cells. A few combs farther on had the old queen doing as fine work as ever. The hive held fourteen Langstroth frames.

Now, would not that have been a fine colony for a novice to have tried to requeen? The young queen was used to start a new colony and the old queen did good work for the rest of the season. That old comb simply divided the colony so far as the reaction of the bees was concerned. There was no supersEDURE impulse involved.

When I return combs to the hive I put them in the same place they were taken from. The ripe cells normally are near the middle of the hive, while the newer ones are usually on the outer combs, those at least a little removed from the comb with the ripe cell. That may explain the difference in the results as observed by the doctor and by me.

ARTHUR C. MILLER.

Yes, under such conditions I should expect bees to break rules.

C. C. MILLER.

BEEKEEPERS BY THE WAY

Uncle Sam's Beeman

It is not easy to write anything new about Doctor Phillips, of the U. S. Department of Agriculture. He has been too long before the public as Government Apiculturist, has been everywhere and all the beekeepers know him already.

It is a man's size job to represent an industry of the importance of beekeeping in the Department. All the problems and all the kicks of the whole country are likely to find their way to his desk. If anything is wrong it is up to Uncle Sam to be prepared to fix it immediately, or give definite instructions how it can be done. It keeps the Government men stepping lively to meet the demands of the public for information and for assistance.

The beekeepers of the country have been well served by Dr. Phillips and his staff. Much real progress has been made in the science of beekeeping since the work has been under his direction. The recent schools for commercial beekeepers conducted by department men have proved very popular and greatly stimulated the

interest of beekeepers in localities where they have been held.



Phillips on a California bee range.

Some Apian Recollections

By George W. York

POSSIBLY I may be forgiven by the reader if I am quite personal in these recollections. If so, I shall begin by saying that my first interest in beekeeping and beekeepers began when, during the winters of 1881 to 1884, I lived in the very pleasant home of Mr. Benjamin Harding, near Kent, Ohio, while teaching the winter country school in his district. He was a nephew of Mr. Thomas G. Newman, and had a few colonies of bees.

At that time Mr. Newman was editor of the American Bee Journal, in Chicago, and Mr. Harding once said to me that he thought I might possibly be useful in Mr. Newman's employ. Evidently he must have intimated as much to Mr. Newman, for, early in March, 1884, when he was visiting his aged sister, and also the Harding family in Kent, I was sent for, and had the pleasure of meeting Mr. Newman for the first time. It was then arranged that I should enter the employ of Thomas G. Newman & Son, in Chicago, Ill., at a salary of \$50 per month. (The "Son" in the firm was Alfred H. Newman, whom many will remember).

I arrived in Chicago late Saturday night, March 29, and Mr. Newman met me at the Union railroad station, he being the only person in all Chicago that I had ever seen before. On Monday morning, March 31, I began my labors in the American Bee Journal office, which ended with May 1, 1912, or 28 years afterward.

The spring of 1892 I purchased the Journal from Mr. Newman and continued as its editor and publisher for 20 years, when I transferred it to Mr. C. P. Dadant, of Hamilton, Ill., who is still its popular editor.

I had not been long in the office of the American Bee Journal until I learned that Mr. Newman had made a trip to Europe (in 1879) in the interest of American beekeeping; that he had met many of the leading beekeepers across the Atlantic, and had visited several countries where beekeeping was beginning to be followed quite extensively. He brought back with him the photographs of many of the noted beekeepers whom he had met in England, France and Italy. He delighted to tell of his trip as the accredited representative of American beekeepers to the beekeepers of the old world. He was made an honorary member of many of the foreign beekeepers' societies, and doubtless helped greatly to establish friendly and helpful relations between the beekeepers of America and those of the foreign countries which he visited.

The first national convention of beekeepers that I attended was held in Indianapolis, Ind., in 1886. There I met W. Z. Hutchinson, who, a year or two later, started the "Beekeepers' Review," now called the "Domestic Beekeeper." I roomed with him at the hotel where the attending beekeepers stopped during the convention and he confided to me his plans

for beginning the publication of the "Review." His enthusiasm was unbounded then, and evidently was never dampened.

Mr. Hutchinson was not only a thorough beekeeper, but was a delightful man to meet. He had many excellent qualities, and we became fast friends, which continued to the day of his death, in 1910, with the possible exception of the time, a few years after he began the "Review," when he and Prof. A. J. Cook advocated the production of "sugar-honey" by feeding the bees cane sugar during dry and honeyless seasons, which procedure I felt in duty bound to oppose very strongly through the columns of the American Bee Journal. While I afterward found that Mr. Hutchinson and Professor Cook were sincerely honest in their advocacy of the plan for unnatural comb-honey production, I still think they were wrong in regard to the matter. I believe the great majority of the beekeepers of that day agreed with the stand the American Bee Journal took, and Gleanings in Bee Culture cordially seconded my position.

I happened to come upon the apian scene when the bitter fight conducted by Mr. Newman through the American Bee Journal against Prof. H. W. Wiley's "scientific pleasantries" was at its height. "Scientific pleasantries" was what Professor Wiley, years afterward, termed his former statement, that the comb of comb honey was first made by machinery out of paraffine, then filled with glucose, and then sealed over with a hot iron, without the least intervention of the bees—or some such unfortunate utterance, which would suggest "manufactured comb honey by machinery." Of course, coming from such a noted scientist and chemist as was Dr. Wiley at that time, gave it wide publicity, to the great damage of comb honey, which never has been, and never will be manufactured except by the bees themselves.

In those early days it was surprising how many different forms of the "Wiley Lie," as Mr. Newman called it, appeared from various authors, and in many newspapers. It kept Mr. Newman as busy as a bee at a Sunday school picnic to run them down, and the vials of verbal wrath that he poured out upon the mistaken imitators of Wiley would have filled a fair-sized encyclopedia. But I am glad to relate that Professor Wiley, in later years, tried to atone for his unfortunate utterance by doing all he could to stop the prevalent practice of adulterating foods of all kinds, so that today there is scarcely any adulterated foods upon the market, and certainly no adulterated honey. Comb honey has always been genuine, so there was no need to defend it except from ignorant or mischievous attacks.

I might say here that at the World's Fair convention of the National Beekeepers' Association, in 1895, in Chicago, Mr. Newman and Professor Wiley met for the first time; and as they were introduced

and shook hands, it was a very tense moment, and a generous outbreak of hand-clapping approved what proved to be the "burying of the hatchet" after a long and bitter war of words, especially on the part of Mr. Newman.

I recall the great hullabaloo a few would-be apian inventors made over their "reversible brood-frames," perhaps James Heddon, of Michigan, being the chief, some 30 years ago. Wonderful claims were made for such frames, and also for reversible hives; but like many other fads, they have almost been forgotten.

Almost immediately after coming into the editorship of the American Bee Journal, I visited Dr. C. C. Miller and family in their quiet, restful home in Marengo, Ill., about 65 miles northwest of Chicago. I think it was in 1892. At that time Dr. Miller was running a home bee-yard and two or three out-yards, all for comb honey. I had met him before that, in Chicago, but I wanted to see him in his home and bee-yard, and also meet his good wife and her sister, Miss Emma Wilson, who for so many years has been Dr. Miller's splendid assistant in all of his bee work. I had a most delightful time, and then began some of the most intimate and valued friendships of all my life, which have continued unto the present day.

From the very time I became editor of the American Bee Journal I looked forward with eager interest to the time when I should have the opportunity of meeting by competitor in the editorial field—Mr. Ernest R. Root—now for some 40 years editor of Gleanings in Bee Culture. It finally came at the annual meeting of the National Beekeepers' Association on the World's Fair grounds in Chicago, the fall of 1893, in the Louisiana Hotel.

I wondered just how I would like Mr. Root; how he would impress me, etc. I am free to say that I was delighted with him, and have been so ever since. There has never been a single break, or even a crack, in our long years of friendship, so far as I know; but I think the credit for its uniformity and continuance is due to Mr. Root. He has always met me more than half way.

It seems that for many years preceding the year 1890 there did not exist the best of feeling among the editors of the bee papers, and also among a number of the leading beekeepers. It became tiresome, and must have been almost annoying to some of the peaceable readers. But the times were changing. We young editors seemed to have a different view of some things. We could forget the things that were behind, and care more for the future. And for all the 20 years following 1892 we tried to keep out of our columns anything that looked like fussing, although, of course, there were occasional times when it seemed necessary to speak plainly. But on the whole, I believe that as beekeepers became better acquainted with each other, through conventions and oth-

erwise, there was less of the old-time bickerings and strife.

Washington.

Retailing Honey

By W. S. Pangburn.

ON page 23 of the American Bee Journal for January, C. C. Baker seems to be out of patience with the journals for giving so much encouragement to beekeepers to cultivate their home market, and seems to be pleased that the editors criticise some of the ways of the retail producers.

We have carefully read both articles, and we heartily agree with all the editors said on the subject on page 301, September number.

We cannot, however, agree with Mr. Baker's ideas of what should take place in the handling of our product, and we believe there are many beekeepers who would not agree with him.

Just what would happen if the "big jobbers" were given full swing in the handling of our honey "exclusively," would be an easy guess.

All we have to do is take a look at other lines that are in the grip of a comparatively few individuals.

Mr. Baker seems to think that, because a salesman is selling the products of these "big fellows," that they know all there is to be known about honey and the selling of it. On the contrary, very few of them know anything about honey, how it is produced, and make some big blunders in selling it.

The first requirement in a good salesman is a thorough knowledge of the line he is selling.

Simply because a salesman makes a sale is no sign that he is creating a demand for honey, and that he can go back and sell to the same customer again. If he cannot do this, something is wrong. Either his price was too high, he was not selling quality goods, or he used poor judgment in making his sales.

Whenever a salesman goes into a small town and unloads a lot of high-priced bottled goods onto a merchant who has to retail the goods at a price far above what the people will pay, he is neither "creating a demand" nor is he a good salesman.

I can cite three instances of this kind in my own territory. These merchants will buy no more of this kind of goods. They have not sold the honey, which shows there has been no "demand created," and it shows poor salesmanship, though being done by these "live salesmen." If the salesman had known his business, he never would have sold a lot of 6-ounce and 1-pound jars of extracted honey, and cartoned comb honey, in these small towns.

Sales like the above are a detriment to our business instead of a help, and never should have been made. We have learned that the small container, which necessarily comes high, has no place in the small towns except in a very limited way.

The bottler has a place in the ranks; we need him to get a lot of

city trade the average beekeeper cannot reach. He is entitled to a reasonable profit and should be encouraged. We, retail producers, also have our place, and can reach another class of buyers that the bottler cannot.

Mr. Baker claims that "not one beekeeper in a thousand" is a salesman. I do not know just what Mr. Baker considers a salesman, but I do know that the beekeepers are selling their honey, and at good figures. We have had considerable correspondence with beekeepers in the past two or three years, in regard to buying honey, and in that time have only been able to get hold of 1,000 pounds at a price that we could pay and get out. Very few had anything to offer, as they were sold out. Talk with beekeepers at conventions, and short courses, or anywhere you chance to meet them, and how many of them are complaining because they cannot sell their honey? I have found none. If there is anyone better qualified to sell honey, tell how it is produced and answer the many questions asked about bees and honey, than the up-to-date beekeeper, who is it? It surely is not a man selling a pipeless furnace. I had a fellow of this kind who wanted to sell my honey along with the furnace this fall, and while he could talk furnace, and was a good salesman in his line, he knew nothing about honey, and I decided he had better stick to the furnace and let honey alone.

Mr. Baker points to the packers as being the solution of the farmer's troubles in the selling of his stock. This is not a farm paper, but I can say that there is not one farmer in a million that would not like to see this ring of 5 big packers broken up and put into competition with one another, if possible. If the exclusive buying of the farmers' product has been so satisfactory, why do the farmers feel this way? I have been a farmer for 30 years and know what the farmers think of this sort of thing.

Why did the California fruit growers organize? Simply because they were up against a similar proposition, only they could help themselves, and did. The same thing will happen if we allow our honey to be handled "exclusively" by the big fellows, as Mr. Baker suggests.

"Why should we worry about what the jobber makes on our honey?"

Just this much. Whenever the jobber gets an extortionate profit on honey, and has the sale of it exclusively, he is curtailing the demand, and people will stop buying honey; defeating the very object that all beekeepers are working for. There are some good men in the honey business who do not produce a pound of honey, and we need them, but if the business was to be turned over to a few big fellows, it would soon be overrun with parasites, and they, like "cooties," make life miserable, and multiply fast.

We believe in the doctrine of the bee magazines, to cultivate our home markets as much as possible. Every beekeeper should further the sales of

honey in his own territory. We are on the ground, know the situation, and what the market requires, better than any organization. We each have our place in this selling and advertising proposition, and should not think for one minute of turning the selling of our product over to someone else "exclusively." If the beekeepers in general ever consider a thing of this kind, let us make it cooperative, and "keep it in the family." There is a possibility that this may come in time, but as yet it is not looming in the distance.

Center Junction, Iowa.

A Strainer That Doesn't Clog

The following plan will make it possible to strain honey thoroughly as fast as extracted. The idea is really A. G. Kursten's, as he and I have exchanged work for years:

With three platforms of different elevations, the honey need not be handled, but is drawn from the extractor into the settling tank and from the tank into the containers. The top of the honey tank should be about six inches below the bottom of the extractor. An insect-tight tube should extend from the extractor outlet for a foot over the edge of the tank. With a yard and a half of muslin, make a long bag which will rest lightly on the bottom of the tank and close the top tightly about the tube. Tie a canvas cover over the top of the tank to keep out dust and dirt. The strainer cloth must not be a stingy affair, but a big, generous bag as large as a two-bushel grain sack. The honey strains through the muslin sidewise, while foreign matter floats on top. With this kind of strainer one can work from morning till night without clogging the strainer, and can draw off honey at any time.

WALTER REPPERT.

Iowa.

More Wire Kinks

In the December issue of the American Bee Journal the article by F. B. Richardson interested me much and I thought it was just what I had been looking for. I never could keep the wires strung tight. They would be tight on completing the wiring of a frame, but in a short time they would be loose. So Richardson's nail hook method appealed to me. I at once tried to put it in practice, but either I did not go at it right or my fingers were too clumsy to accomplish what was intended. I could pull the wire tight all right, but could not fasten it and keep it tight.

While puzzling over it I lit on this way: Fasten the wire around the head of one of those fine nails used in nailing frames, drive the nail through the end bar so it is about half way through, and clinch on the outside. The nail to be driven from the inside. Fasten the other end of wire to another nail, first having determined the proper length, and drive it through the end bar as before, but on the opposite end of the frame, or far enough to tighten the wire until it sings; then clinch the nail.

The wires can be strung as tightly as you desire and will stay tight.

It can be done as quickly as bending the nails into hooks, and it gives better results, in my hands at least.

DR. J. E. AIGLEY.

Illinois.

The (Poor) Middleman

By Fred Huchting

IN the January issue of the Journal, under the topic of "Marketing," C. C. Baker tried to give beekeepers an idea that they would get a better price for their honey if they sold it direct to the packers, which I am absolutely opposed to for the following reasons. First, if the people would buy their honey direct from the producer they would eliminate the middleman, who must charge the people for his labor, advertising and profit, the latter usually in excess. If the middleman is eliminated the beekeeper can get a better price for his honey, save his customer from 20 to 30 per cent and sell more honey, because his customer will willingly buy more when he is not charged an enormous price for it. Mr. Baker indirectly states, "Let the middlemen get theirs." The Government is advising the people to buy direct from the producer and thereby beat old "H. C. L." and any beekeeper with a little common sense knows that is good advice. Mr. Baker also states that the beekeepers should send their customers to the local grocer; but why not have the beekeeper split the grocer's would-be profit with his customer? Second, the packers would put the beekeepers in a fine position if they could control the honey market. They would control it in the same manner as they are controlling other markets today. They would give us their price for our honey and we would have to accept it. Mr. Baker asks, "How much did the farmer get for his pork before the packer took hold of it?" Well, Mr. Baker, is the farmer gaining anything when he sells his pork for 30 cents today when he got 10 cents for it before the packer

took hold of it, and when the farmer wants to buy a harness today he must pay \$60, when he could get one for \$20 before the packers' time, or in other words, selling his stock at a 200 per cent profit and buying his supplies at an increase of 200 per cent.

Wisconsin.

Imperfect Mating of Queens

By Prof. John Anderson

THE bee-mating experiments carried on on Duck Island by Mr. F. W. L. Sladen last July and recorded on page 424 of the December American Bee Journal, have recalled to my mind some observations made in Lewis in 1917. There I had an island all to myself, so far as bees were concerned, and I made a few experiments.

On July 5 a stock placed in isolation gave off a swarm which formed two clusters, thus suggesting the presence of at least two virgins. The two clusters were separately hived. A few days later a third swarm was observed and duly secured, so that there were four stocks, all with queens to mate. The only drones within reach were those flying from these four stocks, but it does not follow that all the available drones were half brothers of the virgin queens. A few unrelated drones might have joined the stock before it was placed in isolation. Even so, it is clear that the choice of the queens was very limited.

On July 23 eggs were found in two of the hives, and the queens in the other two had begun laying by August 3 and 9, respectively. On the last date it was noticed that one of the two earlier swarms had worker brood on 7 combs and no drone brood at all. Two of the other three newly-mated queens produced mainly drone brood (in worker cells), each having just a few scattered cells with worker brood. The last queen to lay was in the parent hive and produced mainly worker brood, with a very few drones (in worker cells).

It occurred to me that the micro-

scope might assist in finding the cause of this abnormality in a young queen, so on July 9 I killed one of the two queens producing mainly drones, and examined the fluid of the spermatheca. To the naked eye it looked as clear as water, and my first thought was that I must have been mistaken in supposing I had seen any worker brood at all in the hive from which this queen had been taken. The microscope, however, revealed the presence of a very few sperm cells, these being very active and displaying movements which were all the more evident and vigorous because unimpeded by the usual congestion. It was perfectly evident that the preponderance of drone brood in the offspring of this queen was due to imperfection in the mating. For some reason or another she had received only a small quantity of sperm, and so was able to fertilize only an occasional egg.

It has been stated that a newly-mated queen sometimes begins by producing drone brood mainly or entirely, and becomes normal after a little practice. In such a case it is probable that it has taken the queen a little time to acquire control of the mechanism of fertilization. In order to give the second queen an opportunity to improve I let her remain in the hive for some time longer, but she continued to produce mainly drones. Some worker offspring of those abnormal queens had by this time emerged and seemed normal.

In the examination of this second queen, on September 17, I associated with myself Professor J. Arthur Thompson, of Aberdeen University in order that I might have independent testimony to this peculiarity in a queen. I burst the spermatheca of a normal queen under the cover-glass and directed the professor's attention to the issue of a "milky fluid" as described by Dzierzon, who could tell fertile from unfertile queens by the naked eye long before he called in Leuckart and Siebold with their microscopes. Later we made an examination with the microscope and saw a field filled with countless squirming threads, twisting, waving, heaving, like a field of corn in the wind.

When we repeated the performance with the abnormal queen Professor Thomson, observing the naked-eye appearance of the burst sac, remarked that it was "quite different." On looking through the microscope his report was, "They are here, and they are active, but they are very, very few."

Sladen, in Duck Island, Canada, and Anderson, in the Outer Hebrides, Scotland, have independently discovered that queens mated under circumstances in which their choice of a drone is very limited, are apt to become producers of inadvertent or accidental drones (drones developed in worker cells). We went a bit further on this side and found that those abnormal queens had secured an insufficient supply of sperm when mating, and we have now to consider whether there is any probable reason why the mating act should be thus



H. C. Cook's boiler for cleaning frames from diseased colonies. Closed for boiling.

incomplete. Mr. Sladen has suggested that the presence of hand-picked drones not more than about two weeks old had something to do with his results. This is quite a probable explanation, but there may be others, and there is room for further observation and experiment.

What occurred to me in August, 1917, was that by greatly restricting the choice of the queen, and perhaps by compelling her to mate with a related drone, I had possibly reduced the vigor of the mating operation, so that the "ensemimation" of the queen was very incomplete.

The fact that a virgin queen, when marking the position of her hive, finishes by ascending into the upper air in a great spiral, has given rise to the erroneous view that mating occurs at a great elevation, and that the successful drone is the strongest in flight, the only one in fact that is able to overtake the queen. Maeterlinck states that mating takes place "in the blue empyrean, remote from the haunts of birds, that would otherwise profane the ceremony," but it is clear that he is not writing from personal observation. E. L. Pratt (Swarthmore) actually saw mating occur, within a few inches of the ground, a few feet from the hive that the queen afterwards entered, and he states (Gleanings for 1904) that the flight of the drone was ten times as rapid as that of the queen.

The very general belief that queens mate at a high elevation to a drone whose power of flight is his only qualification has tended to eliminate from our minds the possibility that sexual selection may play a very important part in the mating of the queen. Do we not find, however, that yellow queens preferably mate with black drones, and vice versa? Cheshire wrote: "Many years ago, when bees were few about me, I placed twenty pure queen-cells in as many stocks. I had abundance of Ligurian drones, and none of any other race—nineteen of the queens crossed." C. N. Abbott, first editor of the British Bee Journal, in a footnote to his edition of Dzierzon's "Rational Beekeeping," writes: "There is little doubt but that the queen is exceedingly particular in her choice of a mate, and is apparently very averse to mating with one of her own kin. With twenty Ligurian stocks, each containing plenty of drones, and one stock of other bees, also having drones, the probability is that of twenty young Ligurian queens nineteen would mate with drones of non-Ligurian stock—at least it has always been so in our experience—tending to the belief that 'natural selection' is more than a myth, even in bees."

The drone is specialized for powerful, long-sustained, and very rapid flight. He is welcome in any hive, and probably travels in his lifetime very far from the hive in which he was produced, for he can take the journey in relays. The result is that a mating queen is encompassed by an enormous superfluity of drones, most of which may have come from a great distance, and her choice is almost ab-

solutely free. Mr. Sladen and I interfered with a primal law of bee nature, and compelled the queens to mate under conditions which were entirely abnormal. We can well believe that the operation may have been a very half-hearted and spiritless affair, possibly on both sides, and its evident imperfection is perhaps not to be wondered at. If this view be correct, it will be of great importance in future mating experiments to arrange that there may be available a sufficient variety of unrelated drones, in numbers also which will proportionately far exceed the nuclei at the mating station.

Aberdeen, Scotland.

Cleaning Frames From Diseased Colonies

There has been much discussion as to the best way to clean frames from colonies of bees diseased with American foulbrood. H. C. Cook, of Omaha, Neb., has an arrangement which is well illustrated in the two photos shown herewith. A rack holds 20 Langstroth frames and fits nicely inside a galvanized boiler, which is closed with a tight cover. The frames are boiled in lye water for about 20 minutes, which is sufficient to remove all traces of honey and wax. One picture shows the boiler closed and the other shows it open, with the rack of frames setting across and the cover on end above the frames. At the right is shown a large pile of frames which have been cleaned by this method.

Wiring

I have read Mr. Crane's article on wiring frames, in the January number and, like him, I believe that it is important to stretch the wires well. I tried several methods until I found the perfect one.

I use 4 vertical wires equally dis-

tant from one another, leaving but about a half inch between the end ones and the end bars of the frame. I weave the foundation between the wires, by placing it under the first, on top of the next, under the third and on the fourth, so that it is alternately to the right and to the left of the wires, two wires on each side of it. Then, with a hot imbedding spur, I sink the wires in the foundation. Neither cold nor heat can make the foundation fall out, nor sag.

Try my method and let me know what you think of it.

H. BELLESSORT.

France.

Queen Cells

GOOD Dr. Miller, by digging up some things I once wrote, makes me appear to be more or less mixed in my preachers and practices. Well, I caught the trick of not knowing it all from him.

I will confess right here that the behavior of the bees and young queens toward cells of different ages is not always to be forecast, and I surmise that the reason is that we fail to judge the different ages correctly. Of course, if all the cells used in the experiments were artificially produced and hence of known ages, we would quickly get some definite information. But so far I have not had the time nor felt the necessity of making the necessary tests.

If I may be permitted to hide behind the genial doctor's favorite shield, let me say "in this locality" where we are seldom blessed with a honey-flood, bees are not so likely to throw an "afterswarm" when two cells of apparently the same age are left (after a first swarm, or when old queen was removed to prevent swarming, or for other reasons), but if, perchance, the young queen is lost in mating, the colony is pretty apt to become hopelessly queenless. If I



Rack holding twenty frames to fit in Cook's boiler for disinfecting foulbrood.

was located in a real honey country I might have to modify my opinions and practices.

In the case of two cells of nearly the same age, by which I mean as far as I can judge by the appearance of the "tips" where the bees have removed the surplus wax, leaving the fibrous cocoon showing, indicating that those cells are about ready to hatch, on the emerging of the first queen the other is usually destroyed. Where one ripe cell is left and one with a very young grub the bees usually let the latter mature until the first matured queen is mated and laying.

I am frank to confess that the whole thing is largely a rule of thumb and not an exact science, as it ought to be. But "second swarms" are so unusual with me, and as queens lost in mating are not unusual, I adopted a plan which I thought would safeguard the colony. If we could always control or forecast conditions we might be able to work more exactly. To the same conditions bees always react in the same way. When it seems otherwise we may rest assured we have failed to correctly analyze the conditions.

As to queens inheriting swarming impulse through being reared in a swarming colony, I am pleased that Doctor Miller and I are agreed that it is not so. As for the heredity of the swarm impulse in Carniolans, let me say it this way, doctor, and see if you do not agree: The Carniolans inherit a super-sensitiveness to heat and humidity, or more correctly, inherit a system adapted to the atmospheric conditions of high altitudes, and when we subject them to our conditions they react by swarming.

ARTHUR C. MILLER.

I offer most humble apologies for having held the foregoing in my hands for the past six months. My health has been such that the thought of writing a very few words has seemed burdensome.

I must confess it had not occurred to me that locality had anything to do with the rules and regulations of bees as to their treatment of queen cells, but of course it may have. Certainly, in this locality, if more than one mature queen cell were present I should expect one of two things to happen, either the first virgin emerging would destroy the others, or else these latter would be protected by the workers and the oldest virgin would issue with a swarm. And I cannot help wondering, Brother Miller, if lighter honey-flows should make your bees act differently, why light flows here would not have the same effect, for this locality is by no means a stranger to light flows, even if honey does sometimes come in a flood.

You say that where there are two cells of nearly the same age the second is usually destroyed upon the emerging of the first virgin. Here I think it is always destroyed unless a swarm issues. If a very young grub be in one cell, it may be destroyed in its tender youth, or it may be allowed

to reach maturity, but not to continue longer.

As to Carniolans inheriting a super-sensitiveness that under certain conditions leads to swarming, I'm not learned enough to know. Anyhow, in the long run, that amounts to the same thing as saying that Carniolans inherit something that accounts for their swarming more than others; so there can hardly be any quarrel between us on that point.

C. C. MILLER.

Professor Werner Dies

We have just received word of the death of Prof. H. R. Werner, of Ames, Iowa, on February 13, with pneumonia following influenza. Mr. Werner was a young man of promise and a careful student of some of the difficult problems relating to the honey-bee. In the 1917 report of the State Apiarist of Iowa appeared a paper by Mr. Werner, "The Mechanism Which Determines Sex in the Honey-bee," which attracted more than passing notice.

Mr. Werner obtained his B. S. and M. Ph. degrees at Franklin and Marshall College, and his M. S. degree at Princeton University. He leaves a small son of about one year of age, a daughter of three, together with a wife, to whom we extend our sincere sympathy.

The Introduction of the Pound Package

By F. W. Osler

JUDGING by the number of queries in our journals it would seem that the proper manipulation of the pound package is somewhat of a stumbling block to the average beginner, yet when a few underlying principles of apiculture are understood the operation becomes one of the simplest. First, it must be understood that the unit in apiculture is one complete hive with a queen. This organized colony will care for its queen, raise brood, gather stores and fight to the death in the defense of its home. The individual bee loses its individuality in the colony. If it be hurt, sick or worn out, it is promptly discarded. Even the queen is superseded when her days of usefulness are ended; a new queen takes her place and the work of the colony continues with the one end in view, namely, the propagation of the species.

A pound package is a number of bees, sometimes taken from several colonies who have lost their home and queen, find themselves confined in a receptacle foreign to their natural conditions—nothing more than a disorganized mass of bees only too anxious to find a home after their strange experience.

The beginner in apiculture is at a loss to know how to organize or unify this force of bees. If the queen is in a separate cage he fears she will be balled, and if he opens the pound package the bees themselves might

fly away or he himself be badly stung by the angry (?) bees.

The matter is really very simple, and a careful perusal of the following directions should clear away most of the trouble. Be sure to have the hive prepared before the expected arrival of the bees. If you are starting your first hive with foundation, put in full sheets on well wired frames (starters are poor economy, to say the least, and buying second-hand drawn comb should always be discouraged, as the danger of disease is too great). Three frames are enough for a pound package. Before introducing the bees mix up a solution of equal parts granulated sugar and water. Paint this on the side and top of the wire package until the bees are well fed. If the queen is in a separate cage, fasten the cage in between the top bars of the frames after removing the card covering the candy which fills the entrance to the cage. The frames should be pushed to one side with a division board following the third frame, the balance of the hive empty. Close the entrance to this empty space with a block of wood and stuff the remainder of the entrance tightly with grass; take a 5-pound honey pail and punch eight or ten holes in the cover; fill with a syrup made of equal parts of sugar and water; invert this over two 1-inch blocks of wood and place in the space not occupied with frames. This will give the bees a little food and help them to draw out their comb. Now take the pound package and cut the side out of it and shake the bees in the hive; if one or two fly out, it does not matter. Put on the cover and do not touch for at least three days.

If you examine the entrance to the hive next day you will find that the bees have made an entrance through the part stuffed with grass and are perhaps wandering aimlessly around on the alighting board, or may be taking short circular flights around the hive. They are simply getting acquainted with the new locality and should be left alone. After three days remove the queen cage. If the queen is still in the hive she may be released by removing the wire screen and letting her run out on top of the frames. Close the hive again for three more days, then examine the frames and if eggs and brood are found you may rest assured that everything is all right. No more frames should be added for at least thirty days, and then only one or two. These are placed to the outside of the three original frames and the bees will occupy them when needed. The splitting of brood should not be attempted by beginners, as a sudden change in the weather might mean a bad setback to the colony by the bees being unable to cover split brood.

Beginners usually injure a colony by persistent examinations. This should be avoided. Once a week is plenty to examine a colony, and a great deal can be learned by studying the activity at the entrance, without lifting the cover or disturbing the bees at all.

Canada.

DR. MILLER'S ANSWERS

Answered by the Editor during the illness of Dr. Miller.

If an addressed stamped envelope is enclosed with the questions asked, a copy of the reply to be published will be mailed to the enquirer. Some questions require too lengthy answers to be available in this department. In such case the enquirer will be referred to the proper authorities or treatises. In many cases if the enquirer will read the questions of the previous numbers he will find exactly what he seeks.

Transferring

1. I would like to know the best time to transfer bees from some old hives into new ones, and the best way to do it.

2. In placing hives on a bee-stand, how close together would you place the hives?

ILLINOIS.

ANSWERS.—1. If your bees are in movable-frame hives, the only thing to do is to lift the combs from the old hive into the new one, placing the new hive on the exact spot occupied by the old one. If you have to transfer from box hives, you had better wait until fruit bloom. Then smoke the bees, overturn the hive, placing some empty box on its stand: drive the bees, by drumming, into another box and afterwards transfer the combs containing worker brood into frames, fastening them in with either twine or wire clamps. Put the new hive on the stand, shaking onto it all the bees. You may also transfer by driving the bees out at swarming time, and hiving them into a movable-frame hive, setting the old hive by the side of the new one. In three weeks, when all the brood has hatched, all the remaining bees may be shaken in front of the new hive.

There is a great deal of careful labor required in transferring bees and if you wish to do much of it you had better get a good book of instructions. You will find explicit instructions in the Langstroth-Dadant book, pages 309 to 315. They are too lengthy to be given fully in the question department.

2. You may place the hives very close together. But for convenience it is better to place them in twos, 3 or 4 feet away from other colonies in the same row, and the rows about 10 feet apart. The location you can dispose of should determine the space you will use.

Wintering

1. I keep ten of my colonies in the city, and in order to keep that number it is necessary for me to place them closely side by side, taking my chances on loss of queens. You recommend after a prime swarm comes off placing it on the old stand and putting the mother hive alongside of it for seven or eight days and then putting it in a new location. This is impracticable, on account of my colonies being so close together; would the same results follow by placing the mother hive on top of the new one facing the same direction, with a bottom-board between the two hives, of course?

2. Last year (1918-19), I made outside cases for each of my hives while on a former location, allowing about 4 inches space between the case and the hive bodies. I packed this space with chaff and my bees came through in great shape—very strong. That winter (1918-19) was a very mild winter. Last fall, on account of desiring to place them in the new location, I neglected to make cases for the new colonies and did not pack the old ones. This year we had the coldest weather we have experienced since 1893, the temperature dropping to 5 degrees above zero during two nights and standing on an average of about 12 to 15 degrees above zero for two weeks. I was afraid I would lose some, if not all, of my colonies, but every hive came through and they are now

working on the pussy willows. Our winters here are mostly rain, with temperature from 45 to 60 degrees, with perhaps a total period of two to four weeks when the temperature will drop to 32 and 20 above. Last winter, before I saw how my bees came through I had ordered some double-walled hives to use, in order to avoid the more cumbersome cases with the attendant packing, and the point I desire to make is, under these conditions, would you advise the use of a large hive like the modified Dadant (single-walled), without further protection, instead of the double-walled hive, where you wish to avoid swarming as much as possible?

WASHINGTON.

ANSWERS.—1. The advice to place the old colony, which has cast a swarm, by the side of the swarm, is given in locations where the heat of summer induces the old colony to swarm again. If your location is, as I believe it is, with moderate temperature in summer, it is as well to leave it as nature dictates. There is a possibility of losing too many bees out of the old hive and having its brood chilled if you place either above or by the side of the other. It would fare just as well above the other as on the side.

2. We use the Dadant hive with very little more protection than you mention, here in this cold country, where the thermometer goes down to 20 degrees below. The results that you have had are secured here also, in spite of low temperatures, when the cold spells do not last more than a month without giving the bees a flight. The packing cases or outside cases have proven too expensive for us, although there are seasons when we would wish to have them. But the average season here is sufficiently irregular to give the bees a flight about once a month, in spite of the cold northern winds that come from time to time.

Afterswarm

Last summer I had one swarm come out which I hived; then on the 9th day the bees came out in a big swarm, but went back in the hive again; did the same trick again on the 12th day. What was the trouble with them?

WISCONSIN.

ANSWER.—Have never seen anything of the kind, except with secondary swarms, or afterswarms, when the young queen goes out to mate. But it usually takes place before the 12th day. It is rarely a large swarm.

Moving Bees—Aluminum Combs

1. Can bees be transported in a car 20 miles, and what part of the day would be the best for such work?

2. What time this spring would be the best to buy them?

3. Would you advise me to buy the aluminum combs, which I see advertised in your paper? Are they any better than others?

4. How far away from buildings should bees be kept?

MINNESOTA.

ANSWERS.—1. Yes, and much further. In early spring it may be done at almost any time of the day, but early morning is best.

2. March, April or May. Sometime before fruit bloom.

3. Aluminum combs are still an experiment. They have some very good points and some defects. The pro and con will not be ascertained positively before they have 2 or 3 years of trial.

4. You may keep them right close to buildings, if the line of their flight does not interfere with people or animals. As a rule it is better to place them in the orchard, or along a fence, in the shade if possible. There should be no occasion for people or animals to pass within 50 feet of the front of the hives, unless there is some obstruction, such as a hedge or low shrubs in front of them.

What Price to Pay for Bees

1. What is a fair price to pay for an ordinary swarm of bees in box hive?

2. What is a fair price to pay for an ordinary swarm of bees in standard hives?

3. Do you not think it best to requeen these swarms this spring?

ILLINOIS.

ANSWERS.—1. The price of a swarm in a hive depends upon the strength of the swarm and the time of purchase. If by swarm you mean colony of bees in a box hive, it may be worth from \$4 to \$8, according to its size, its supplies in honey and the time at which you purchase it. The most favorable time to buy is spring.

2. In a movable-frame hive the value of the swarm depends upon the size of the hive and also the conditions enumerated above. A colony in 10-frame Langstroth hive is worth more than in 8-frame. A colony in Jumbo hive is also probably worth more than one in Langstroth hive, since the hive is larger. Besides, a question which is not raised in the case of box hives should be considered here. The colony in movable-frame hive may be pure Italians, or hybrids, or blacks. In box hives they are usually black bees. So a colony in movable-frame hive may be worth from \$8 to \$20. Straight or crooked combs will also make a difference. The value depends also somewhat on the demand.

3. That must be left to the judgment of the apiarist. The colonies that have vigorous, prolific Italian queens had better be left till after the honey crop without change. For the others, your judgment is better than mine.

Beginner

1. When is the best time of the year to transfer bees from trees to hives? Should a person move hive soon after hiving, or leave it there awhile?

2. If you were going to start in the bee business anew what kind of hives would you prefer?

3. Which do you like the best, 8 or 10-frame hives?

4. Which would be the best for the beginner, to raise comb or extracted honey?

5. What are some good honey flowers?

6. When is the best time of the year to plant wild buckwheat and clover?

7. What is a good plan for removing bees from hollow trees or hives?

8. What style and size of smoker would you prefer, and what do you use for fuel?

KANSAS.

ANSWERS.—1. Spring is the best time, because the hives are lighter. If you wanted to kill the bees for the honey, fall would be best. The hive may be moved just as soon as the bees have gathered together, as they are very much excited and will remember the new location more easily.

2. The deeper frames, no matter whose make.

3. Ten-frame hives are probably best.

4. Extracted honey requires less constant attention, after you have your supers built. You use the same supers over and over again.

5. In your State, alsike, white clover, sweet clover and wild field flowers.

6. Probably spring.

7. It depends upon the height at which the colony is located. If it is very high, you may break the tree in cutting it. Then the bees will have to be transferred at once. If the log can be cut so as to haul it home, follow the directions given in the text books for transferring.

8. The new Bingham bee smoker, about 3½-inch barrel. But they are all good. After lighting a fire in the smoker, any kind of dry wood will do, except pine. Dead limbs from shade trees in the apiary are as good as anything.

Wintering—Aluminum Combs

1. I have a stand of bees that has only about 10 pounds of honey in it now; would like to know if that will winter them till the 1st of April, or do you think I will have to feed them before the first of April?

2. Would also like to know how many pounds of bees in a 3-frame nucleus, and if they will build up enough so as to make any surplus honey in one season?

3. Would like to know if you have any bees to sell, and the price you ask for them?

4. I am thinking of getting some aluminum honey combs and would like to have your opinion as to whether you think they are all right for using them as brood combs, and if you think the bees will winter over in them all right.

INDIANA.

ANSWERS.—1. It may last through all right. So long as you can see sealed honey along the top bars there is no immediate cause for alarm. But bees will not do so well when there seems to be any approach to shortage.

2. Two pounds will do very well. In a good season they may yield a nice surplus. In a poor season they may need feeding.

3. I've nothing to sell.

4. Some speak very highly of these combs, but we will know more about them when they have been fully tried. You could easily try them on a small scale.

Swarming—Queens

1. I have about as many swarms as I care for, and am interested in measures preventing swarming. I have a Hoffman hive. The brood chamber holds 10 frames. I want to remove one frame to give more room for bees, keep it out all summer and return it when fall begins. Would you advise me doing so?

2. Root, in his book on bees, says that introducing young queens at the beginning of the harvest would have a tendency to prevent swarming. Our main honey flow is white clover in June. Would I be right to introduce young queens for above purpose from May 1 to 15.

3. Is it advisable to buy select untested queens?

IOWA.

ANSWERS.—1. It is not practical to remove one frame to give greater spacing and return it in the fall, because the bees will build out the cells at the top of the combs and fill them with honey and seal them at the end of the breeding season. So you will find it difficult to replace that comb. Better leave it out.

2. Introducing queens from May 1 to 15 is all right. The only trouble is in securing the queens. They are more in demand at that time and a little harder to secure.

3. It is always best to buy select queens if you can afford to pay the price. But a select untested is comparatively less valuable than a select tested, because the breeder has had no time to test her, and judges her only by her looks and a few days of laying.

Full Sheets—Buying Nuclei

1. I have a colony of bees in a box which I expect to change to modern hives in the spring. I had thought it best to use full sheets of foundation in the new hive, also to use full sheets for any new swarms I might catch; but on page 44 of the February American Bee Journal, and by M. G. Dadant, it says: "Never give full sheets of foundation to a new swarm." Now will some of you please tell me how much, if any, foundation I should use in hives

ing a new swarm. Please remember, I have no drawn comb or anything except what I buy.

2. If I should buy some 2 or 3-frame nuclei with queens in them, enough bees on same to go ahead and do all right, would you advise buying nuclei or bees by the pound to start with.

ANSWERS.—1. It will be all right to give some full sheets of foundation to a new swarm if you give it also some already built combs. You say you have none. But you must have some in the hive that swarms, or perhaps in some hive which does not swarm. So you can readily exchange a few combs for sheets of foundation. The reason why M. G. Dadant advises not to give full sheets to a new swarm is that the bees usually load down the sheets under their weight in such a way as to break them almost at once. But if they are given combs already built, they will hang to those in preference and will not overload the foundation. If you cannot give the swarm some built combs, better hive it on narrow starters. Sometimes, when the weather is not hot, full sheets, well wired, will stand the weight of bees till they are built out. But it is not advisable to give beginners the advice to use them. When you transfer a colony in spring, it is all right to alternate full sheets of foundation with the transferred combs. In that case there is no danger of overloading them.

2. Three or four-frame nuclei are better than bees by the pound, because they have bees, queen, brood and combs, with probably a little honey. But when buying from far away bees by the pound are more economical.

Ventilation

In order to get the extra ventilation claimed for the brood chambers with the 1½-inch spacing would not the bees be compelled to build their brood combs of the same thickness as they do in the 1¾ spacing? Is it a fact that when you give them the wider spacing they make the cells deeper? In that case they would have no extra ventilation.

PENNSYLVANIA.

ANSWER.—The cells must be of just the proper depth for brood rearing. So wherever they rear brood, there is a wider spacing. But when the brood rearing is over and they use the cells for honey, they fill them so as to leave only a sufficient traveling space. So the cells are shallow when brood is reared and deep when full of honey. This is even the case, but to a less extent, with the narrow spacing. The advantage of the wider spacing is that it gives more room for ventilation during brood-rearing time and more honey over the cluster in winter. If you look at your brood combs during breeding time, you will see that all cells that have brood have been pared down to the proper depth for the queen to lay and for the brood to be capped over.

Granulated Honey—European Foul-brood

1. I sold some honey to a grocery store and it granulated in a short time. Do beekeepers and bottlers ever put anything in honey to keep it from granulating so soon?

2. I strained my honey through a flour sack. Do you think that will take out all the wax, or is there any better way to strain it?

3. I was bothered with European foulbrood last year. I treated them with the Dr. C. C. Miller plan. At about what time in spring is the best time to start treating them, if there are any with the disease?

4. Would it be safe to use extracting supers from diseased colonies on those that do not have the disease, if the combs are free from honey? And how about combs that were not cleaned and contain a little honey? If honey contains disease it seems as if those that are treated by the Miller plan would get the disease again from the honey in the hive. What do you think about it?

5. Where do you suppose I could get a hy-

drometer for treating honey as explained on page 160 of the May, 1910, American Bee Journal?

ANSWERS.—1. No, there is nothing that you can put into honey and keep it pure, to prevent granulation. The most practical way is to heat the honey slightly and evaporate some of the water it contains. It would seem that this would make it granulate sooner, but it has just the opposite effect. Be sure not to overheat it or you will spoil its flavor. We prefer to educate the people in regard to granulation, though it is slow work.

2. No need of straining honey to get the wax out. Let it rest awhile and the wax particles will come to the top, when you can skim them off. We never strain our honey. But a flour sack strainer will take out the wax, though it is an endless job unless the honey is warm.

3. Look for disease just as soon as you can open the hives safely in the spring. Treat them when there are blossoms in the fields. Keep on looking for disease all summer long and treat when needed.

4. It is not at all probable that honey transmits European foulbrood as it does American. We are more or less at sea yet in this matter, and even our scientists acknowledge that they have much to learn. At any rate, there seems to be much less danger in combs and honey with European foulbrood than with American.

5. Any druggist can get a hydrometer for you. It will probably not be of the same make as those used in New Zealand, but you can easily post yourself by tests of very thick and very watery honey to begin with. After you find the high and the low points you are ready to test any honey that is produced.

Honey Tree—Requeening

1. Will you kindly tell me the kind of tree you would advise me to get for a grove for a bee-yard? I want a fast-growing tree. Could you tell me where I could get them?

2. I am going to requeen six colonies of black bees with the Italians. Could you tell me where I could get the queens?

MICHIGAN.

ANSWERS.—1. For Michigan I would recommend basswood. It is a good honey yielder and a fast growing tree, with fine foliage. You should find the young trees readily in the woods of your locality. Or perhaps your local nurseryman can supply you.

2. You should be safe in buying from any queen breeder who advertises in the magazines. But the old established ones are best, because they have already proven their fair dealings and the quality of their queens. Fakes generally disappear promptly.

Bees on Shares

1. How is a bee-yard run on shares? If I start this year with 100 2-pound packages, under a contract to run three years, what would be a fair division of the crop? Owner will furnish bees and all supplies for the yard. I will do all work in management, harvesting the crop, packing for winter, etc; bees to be wintered outside in individual packing cases? If yard is run for increase as well as for honey should I share in the increase, as well as the honey, provided that it was run for honey only, on the last year of the contract?

ONTARIO.

ANSWERS.—1. We used to take bees on shares, long ago, at different times. The conditions were that the owner was to furnish everything and we were to do all the work. The crop was divided into halves. But if sections or other supplies were furnished, we paid for the share of them that we got.

2. We received half of the swarms, but paid for the hives which we got with them. When the swarms were fixed by the owner, instead of by ourselves, he was paid for hiving them. Of course, we also got half of the artificial in-

crease, in the same way. Special conditions may require different arrangements. These matters should be agreed upon by the contracting parties themselves.

Uniting—Transferring

1. I wintered my four stands of bees on a porch. The porch is closed on the north and west. It was a good dry place. I did not wrap them, as two were in old-fashioned bee-gums and two in 10-frame hives. They all seem to lose a good many bees, but lost more in the 10-frame than in the old bee-gums. They were covered with frost on the inside of the 10-frame ones. Only a few are left in the 10-frame. Will you tell me how I can unite the two 10-frame ones without their killing one another, as they did last year when I tried to unite them? In about a half hour the ones I put in were carried out dead.

2. Can I transfer the bees from the old straight gums to a 10-frame hive without taking the old hive to pieces, and how?

ILLINOIS.

ANSWERS.—1. To unite bees do it in April, when they can fly once in a while. Then open the stronger of the two hives, so as to uncover the frames. Put a newspaper spread over the top of the hive, then put the body of the other hive over the newspaper and cover the pile with cover as usual. Smoke them a little when doing this. Usually they unite in this way without fighting. But it would be still better to kill the queen of one of the colonies first.

2. For transferring you will find directions in both the January and February question department of the American Bee Journal. But you ought to have a book of "First Lessons," in which you will find the transferring of bees and many other things in detail.

Requeening—Swarm Prevention

1. I have a number of colonies of black bees which I desire to requeen as early as safe. In ordering queens from the South how soon

would it be safe to requeen that the queens may not lose their efficiency?

2. To prevent swarming in comb-honey production, instead of cutting out queen cells will it be better to remove the queen and leave two cells of the same age? Would the bees destroy one of the virgins? Would it be safe to wait till the cells were capped? INDIANA.

ANSWERS.—1. Just as early as you can secure queens from the South it will do to change your queens. But do not order them to come before May 10. There is more loss and disappointment in early mailing of queens. Do not remove the old queens until the new queens are on hand.

2. Cutting out queen-cells does not always prevent swarming. If you leave two cells of the same age and the bees have a tendency to swarm, it will be sure to cause swarming, for the first one hatched will go to the bees. The bees would destroy one of them, if they did not want to swarm. In that case it would be of no benefit to have killed or removed the old queen. Of course, if you remove her with some brood and bees and make a division, you will very probably succeed in preventing swarming by leaving one queen-cell only.

Foundation

1. I read an article in the American Bee Journal saying never to place foundation in the brood chamber. Where shall it be placed in order to be drawn out, and what should be placed in the empty space in the brood chamber?

2. Is it advisable to put full sheets into all the frames in a super? MINNESOTA.

ANSWERS.—1. That must be a misprint, or you misremember the advice. What was said was not to give full sheets of foundation to new swarms. But you can give them some full sheets of foundation if you give them some empty combs with the foundation, so that they will not put all the weight of the swarm at

once on the foundation. It is a good plan to take a couple or three combs from some good colony, when hiving the swarm, to exchange for sheets of foundation. We aim to have some built combs on hand at the time of swarming. Foundation put into the brood chamber of a strong colony will be built out promptly and efficiently. Try it.

2. Yes, full sheets are always profitable to use, as they help secure straight worker comb and save a great deal of time to the bees.

Increase—Swarming

1. I have two swarms of bees and would like to make an increase. How can I get an increase in colonies?

2. When is the best time to make an increase?

3. When is the best time to put them outdoors in spring? My bees are wintering good so far as I can see.

4. What time do bees swarm?

5. How can I prevent them from swarming? If I clip the old queen's wings when I get them out, does that prevent swarming?

6. Will there be young queens in the hive in spring, besides the old queens?

WISCONSIN.

ANSWERS.—1. Either by natural swarming or by dividing the colonies.

2. During the honey harvest, which comes in June-July in Wisconsin.

3. When the soft maple buds bloom, during a pleasant day of sunshine.

4. Same answer as No. 2.

5. It will not prevent them from swarming, but it will prevent the swarm from getting away. Swarm prevention is quite a problem and requires special management.

6. No, the bees do not raise young queens until they need them. You should read some beginner's bee book so as to inform yourself. It is impossible to give a whole treatise in the question and answer department.

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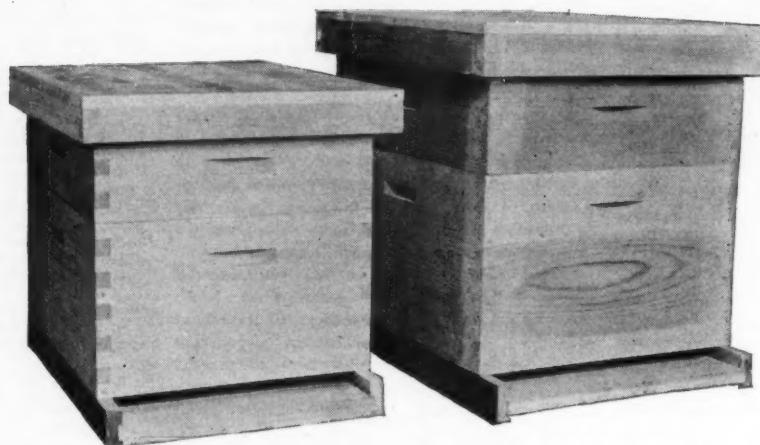
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Isle of Wight Disease

By Thos. F. Cobb.

IN the December issue of the American Bee Journal you have commented adversely on the theory of "overwork" in connection with Isle of Wight disease, and advise that British beekeepers try the 16x10-inch or larger frame. Now, I have been using the 16x10-inch right along, and should be on nothing else, except for the difficulty of buying bees on anything else but "standards," and yet hold that "overwork" is the root of all evil, therefore it is clear our conception of the matter differs.

May I try to explain?

To begin with, it is not suggested that **only** the queen is overworked, though that may well be the case in certain instances, but stress has been laid on her, as she is the means of transmitting any harmful effects to future generations, while with the workers it is only a temporary affair, even if it results in their death.

You ask: "Are the chicks hatching from a prolific hen, properly fed, any weaker than those from an inactive hen, slightly fed?" My answer is that if you feed both hens "properly," then the chicks from the prolific hen are much weaker. The fact that the prolific strains are more difficult to hatch and rear is well known in the poultry world; the germ is far less virile, resulting in chicks that never hatch, or if they do, easily die.

I ask you to seek confirmation of this statement, as the hen is probably the nearest analogy we can get to the queen bee; but if we consider any other creature, the breeding of which man has studied, we always find they are unable to reproduce beyond a certain limit without harm resulting to parent and offspring.

Let us leave the queen, in dispute if you like, and turn to the workers. You will agree that it certainly is possible to overwork them. The feverish haste to rob or gather when there is no honey in the hive, and after a period without food, show conclusively it is possible to produce the most amazing excitement, during which they will work more than a normal colony. Remembering the powerful influence that feeding has in bee economy, is it not the most natural thing in the world to suppose the food fed to queen and larvae, during the period of excitement, is not of the correct consistency? Perhaps it is weak, badly digested, or maybe lacks certain ingredients, in which case, when fed to the queen, would, of course, produce eggs not up to the standard, and when fed to larva, a weakened bee.

This form of overwork could exist just as easily in the small British standard hive as in the larger American sizes, and if you will cast your mind over any English bee literature you have read, has it not struck you that all manipulation advised tends to keep the bees **always** in that state of excitement referred to above, in very strong distinction to the more natural methods of you Americans? Emptying brood frames,

feeding small quantities daily, spreading brood, etc., are not much in favor over your side, and even if you believed in them, with your huge apiaries it would be impossible to carry them out with anything like the thoroughness attained here.

But even supposing there was no feasible explanation at all of why overwork should have any connection with Isle of Wight or other disease, there is such a mass of **circumstantial evidence** pointing to a connection that I should still believe in it. I refer to such facts (more or less established) as the following:

Strongest colony frequently first to go.

Incidence highest in stocks that enter supers and lowest in skeps.

Isle of Wight often appears just after a spell of hot weather.

The peculiarities of "immune" strains, too, are worth considering. Bees come over from Holland and Italy, are dumped down in the midst of infection, absolutely immune, and yet after a short time, under the baneful influence of British beekeeping methods they become just as helpless as natives. Something has caused it. Can you think of a better explanation than "overwork?"

England.

If our correspondent is right, then there should be no disease in apiaries of old style skeps, which are allowed to breed according to their natural instincts. But, as far as we hear, the mortality by Isle of Wight disease is universal in the countries under its influence. Yet the British hives are almost universally of small size.

On the other hand, the people with large brood chambers should have depopulated apiaries. The evidence is exactly the reverse, in this vicinity at least.

Mr. Cobb asserts that the prolific strains of poultry are more difficult to hatch and rear. The most prolific strain in this part of the world is the Leghorn chicken, and it is also one of the hardiest. It is true that special food, intended to increase the laying has a tendency to weaken the race. We grant this. But no one has suggested that a special food should be prepared for bees. The large hives give opportunity for the full development of the queens' prolificness.

We have no experience with Isle of Wight disease, but if prolificness has any baneful influence, then it should also promote foulbrood. The practice does not agree with this theory, which is, after all, only a theory.

Beekeeping in Santo Domingo

By H. Brenner

THE native help here is very good-natured, but they do not like to work, and one can hardly blame them, since nature produces abundantly almost everything they really need. And yet, with help like this I do not have any more serious trouble than at home. After they work in the apiaries a week or so under my di-

rection they take their medicine without making much of a face.

I sometimes feel like folding my hands in my lap, when they start extracting, and enjoy the fun. It is easy to see why honey from the tropics has a bad reputation and brings so low a price. A great deal of the native honey comes from bees in hollow logs, petrol boxes, clay pipes and other receptacles. Even where they extract from frame hives, if they are not almost forcibly prevented, they take everything, good or bad, white or amber, green or ripe. In many cases the tropical honey ferments in the barrels before the steamer comes to load them. I have shown them the reason and have taught my hands the correct way to extract. When I first came here, I did not find a settling tank in a single apiary I visited. They would put the honey directly into barrels with all of its impurities.

With all the difficulties, we have had a wonderful success. Only the other day Dr. Maldonado said: "Look here, Mr. Brenner, last year you told me that we would need many new supplies this winter, but how could you expect me to believe then that any man with no trained help could create out of 40 run-down colonies of bees, in hollow logs, four apiaries containing nearly 600 colonies in first rate condition?" The question of supplies has, indeed, been our hardest problem. When we started we made supers out of gasoline and petrol boxes. The doctor has a small hand-mill and I have trained a native to make some first-class foundation. It does not compare with the Dadant foundation I used in Texas, but the bees accept it and draw out perfect combs.

I wish some of my friends who love nature could be here with me on some of my trips to the apiaries. Especially interesting are our trips by motor boat in nice weather. Mile upon mile we go up the wide estuary of the river and see no house or sign of man, only virgin forest and tangled bush. The white and blue water-fowl have a very grotesque appearance, nothing but neck, wings and legs, with seemingly no body. Swans ride gracefully out of our way and dozens of green parrots, with hoarse cries, whirl overhead.

Bees Killed by Spraying

I had my entire apiary, consisting of 120 colonies in all, completely wiped out by spray poison during the season of 1919. Unless something is done to prevent spray poison the bee business is at an end in the Yakima valley. This is a heavy bearing apple section and the apple growers so far have had all the bees necessary in spite of the fact that they killed some every season. When the bees are all killed things may look different to them. However, it is hard to prevent killing the bees so long as they must spray.

The bees follow a spray machine and work on the wet leaves. The dry arsenate of lead we now use seems

to be more fatal than when we used the paste. I have an orchard and helped to kill my own bees. It seems to me that something could be found to mix with the spray powder that the bees would not work on.

While I am one of the heavy losers, I am not the heaviest, as some have lost more bees than I.

J. H. STAFFORD.
Washington.

Demonstration Field Meeting

A special meeting of the New Jersey Beekeepers' Association will be held in Edward C. Sharp's apiary, near White Horse, Mercer County, N. J., on Saturday, April 10, 1920, at 2 o'clock p. m., to demonstrate the results of ample winter packing.

Colonies which have been packed according to Government specifications will be unpacked and examined.

ELMER G. CARR, Sec-Treas.,
New Egypt, N. J.

Membership March 10, 1920, 409.
Your help will make it 500.

A Great Bee Country

This is a great honey producing section, on the Shoshone project. On my farm of 120 acres, this year, there will be 110 acres in sweet clover and alfalfa, enough material for twenty tons of honey. It seems that bees cannot be had. Perhaps you can help me to get in touch with someone who has the bees and equipment to utilize this nectar, benefit ourselves and help produce food for our countrymen.

E. D. RICHARDS,
Powell, Wyoming.

Notice to Illinois Beekeepers

The membership dues in the Illinois Beekeepers' Association are \$1.50 per year. This includes a copy of the cloth bound annual report, free bulletin service, including 25-word advertisement in bulletin, and subscription to choice of American Bee Journal, Gleanings or Domestic Beekeeper. If more than one journal is wanted, add 75 cents for each yearly subscription. Address the secretary at Mechanicsburg, Ill.

G. M. WITHROW, Sec'y.

CLASSIFIED DEPARTMENT.

Advertisements in this department will be inserted for three cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 20th of the month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

BEES AND QUEENS

FOR SALE—I am in a position to sell a few thousand pounds of bees in packages. I have done extensive shipping, therefore I can properly prepare bees for shipment. I guarantee safe arrival and satisfaction.

Ward & Griswold, Modesto, Calif.

WANTED—to hear from beekeepers wanting queens from three-banded Italian stock which for the last 10 years made the largest average per colony of any bees in Indiana. All orders accepted to be filled after May 15.

Charles Kennard, Knightstown, Ind.

FOR SALE—Forty swarms of bees in good condition, free from disease, for quick sale, \$8 per swarm.

Edw. Stanley, Mt. Carroll, Ill.

FOR SALE—Bright Italian queens, \$1.50 each, \$14 per dozen. Ready after April 15.

T. J. Talley, Greenville, Ala., R. No. 4.

FOR SALE—Three-banded Italian queens, June 1 to October 1, untested \$1.50, tested \$2.50, select tested \$3.50.

Wm. C. Young, Box 249, Des Plaines, Ill.

ITALIAN BEES (the kind that fill from 2 to 6 supers), for sale, in new 8 and 10-frame Root hives, at \$12 and \$15 per colony. Bees to be shipped by express. Queens after May 1, \$2 each; \$11 for 6. Single Comb Rhode Island Red hatching eggs (280-egg Trapnested strain). \$2.50 per 15; \$12 per 100.

Miss Lulu Goodwin, Mankato, Minn.

FOR SALE—Queens, nuclei, packages, colonies from our apiaries in Arkansas and Louisiana. Write for prices now.

The Foster Honey & Mercantile Co.,
Boulder, Colo.

FOR SALE—We have a quantity of clover extracted honey, put up in new 60-lb. cans, two in a case, that we are offering for sale as follows: One 60-lb. can, \$15.50; two 60-lb. cans at \$30. For larger quantities ask for special price, stating amount you can use. This crop of honey was left upon the hives until thoroughly cured by the bees before extracting, and is of superior quality. A trial order will convince you.

E. D. Townsend & Sons, Northstar, Mich.

FOR SALE—Three-banded Italian queens, ready June 10. Untested only, 1, \$1.50; 6, \$8; doz., \$15. Book orders now.

Ross B. Scott, Rt. No. 4, La Grange, Ind.

FOR SALE—Italian queens from best disease-resistant stock, untested \$1.50 each, \$15 per dozen. Larger orders, prices given on application.

O. M. Wallace,

Burton, Shiawassee County, Mich.

FOR SALE—3-frame nuclei for May delivery, \$5 each, with untested Italian queen. We are also booking orders for Italian queens for June and balance of summer. Write for prices.

Irish Bros., Doctortown, Ga.

FOR SALE—200 3-frame nuclei, without queen, \$5 each, delivered May 1.

James Johnson, Box 265, Pocahontas, Ark.

FOR SALE—200 2-frame nuclei ready for delivery from May 1 to 20, at \$5.50 each, with young untested queen. Where tested queens are wanted, \$6.50 each.

Cotton Belt Apiaries, Roxton, Texas.

FOR SALE—My 3-banded Italians in brand new Root 10-frame hives at \$12 per colony. They are dirt cheap.

Theodore N. Ross, Nashville, N. C.

FOR SALE—Superior California Queens—Western beekeepers may now secure our famous Italian queens at the following prices: One untested, \$1.25; fifty untested, \$57.50; one hundred untested, \$100. Orders filled in rotation; first deliveries March 1, 1920.

Edson Apiaries, Gridley, Calif.

FOR SALE—Three-banded Italian bees and queens; untested queens, \$1.50 each; tested, \$2.50. Two-pound package bees, no queen, \$4; add price of queen if wanted. Queens reared from best stock and by best methods. No disease. Safe arrival and satisfaction guaranteed.

J. L. Leath, Corinth, Miss.

FOR SALE—80 colonies, will sell in small lots, or all together.

W. D. Carder, Ludlow, Ky.

FOR SALE—Leather colored Italian queens, tested, until June 1, \$2.50; after, \$2; untested, \$1.25; \$13 per dozen. Root's goods, Root's prices.

A. W. Yates,

15 Chapman St., Hartford, Conn.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect markings. Price \$1.25 each; 12 or more, \$1 each.

J. H. Haughey, Berrien Springs, Mich.

ITALIAN QUEENS OF WINDMERE will be ready in May. Untested, \$1.25 each; six for \$7. Tested, \$2 each; select tested, \$2.50 each. Now booking orders.

Prof. W. A. Matheny, Ohio University,
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FOR SALE—Choice Iowa bred 3-banded untested Italian queens, after June 15, \$1.75; July, \$1.50; August and September, \$1.25 each.

J. R. Coon, Ames, Iowa.

FOR SALE—3-banded Italian queens from best honey-gathering strain obtainable; (no disease). Untested queens, \$1.25 each; 6, \$6.50; 12, \$12. Select untested, \$1.50 each; 6, \$9; 12, \$18. Tested, \$2.50 each. Safe arrival and satisfaction guaranteed. Your orders filled promptly.

W. T. Perdue & Sons,
R. No. 1, Fort Deposit, Ala.

FOR SALE—Highest grade 3-banded Italian queens, ready June 1. Queen and drone mothers are selected from stock of proven worth in hardiness, gentleness, honey production and disease-resisting qualities. Untested, each, \$1.25; 6, \$6.50; 12, \$12; 50, \$47.50; 100, \$90. Your correspondence will receive prompt attention, and I guarantee satisfaction.

A. E. Crandall, Berlin, Conn.

BOOK YOUR ORDERS for QUEENS now—Goldens, \$2; tested, \$3; banded, \$1.50; tested, \$2.50; six or more 10 per cent less.

Clover Leaf Apiaries, Wahoo, Neb.

"QUALITY" THREE-BANDED ITALIANS from excellent stock; untested queens, 1, \$1.50; 6 for \$7.50; 12 for \$13.50; 50 for \$55; 100 for \$100.

N. J. James,

1185 Bird Ave., San Jose, Calif.

MOTT'S Northern Bred Italian Queens—I have breeding mothers place in the south for April and early May queens. Plans "How to Introduce Queen and Increase," 25c. If you want beauty with the best of summer and winter laying birds, try a setting of my Golden Campines.

E. E. Mott, Glenwood, Mich.

FOR SALE—Package bees, dependable queens.

E. A. Harris, Albany, Ala.

FOR SALE—A. I. Root strain of resisting and honey-gathering, leather-colored Italian queens. Untested queens, \$1.50 each, 25 or more \$1.40. Tested, \$2.50 each, 25 or more, \$2.25. Select tested, \$3. For larger amounts write.

A. J. Pinard, Morgan Hill, Calif.

FOR SALE—8,000 pounds of bees in pound packages, early.

H. E. Graham, Gause, Texas.

FOR SALE—Italian queens from some of the best stock in the United States, mailed as soon as hatched. Safe arrival guaranteed to any part of the United States and Canada. All queens mailed in improved safety introducing cages. Order early. Send for circular. Prices, April to October 1, 75c; 10, \$6; 50, \$2.50. James. McKee, Riverside, Calif.

1920 PRICES on nuclei and queens, Miller strain. Queens, untested, \$1.50 each, \$15 per doz.; tested, \$2.00 each, \$22 per doz. One-frame nuclei, \$8; two-frame, \$5; three-frame \$6.50, without queens, f. o. b. Mason, Miss. Five per cent discount in lots of 25 or more. We have never had any bee or brood disease here. Will have no queens except with nuclei, until June 1. Safe arrival and satisfaction guaranteed.

Geo. A. Hummer & Sons Prairie Point, Miss.

HARDY Italian queens No bees

W. G. Lauver, Middletown, Pa.

1920 PRICES for "She Suits Me" queens. Untested Italian queen, from May 15 to June 15, \$1.50 each. After June 15, \$1.30 each; \$12.50 for ten; \$1.10 each for 25 or more.

Allen Latham, Norwichtown, Conn.

Don't stop advertising.

because honey is high. Make it more in demand, so the price will stay where it is. Little stickers on your letters, papers, etc., will help. Printed as below in bright red.



Price of 1,000 gummed, 50c

American Bee Journal Hamilton, Illinois

FOR SALE—2-frame nuclei, only \$5; if queen is wanted add \$1.25; May 15 to June 15. L. A. Schwab, Imboden, Ark. Box 385.

FOR SALE—After April 15, our golden Italian queens, untested, one \$1.50 or \$15 per doz.; select untested, one, \$1.75 or \$18 per doz.; tested, \$3 each. Safe arrival guaranteed. Tillary Bros., R. 5, Georgiana, Ala.

FOR SALE—Goldens that are true to name. Select untested, one, \$1.50; six, \$7.50; 12, \$13.50; 50, \$65; 100, \$100. Garden City Apiaries, San Jose, Calif.

FOR SALE—Golden and three-band queens. Untested, April, May and June delivery. \$1.25 each; \$12.50 per doz. Satisfaction. R. O. Cox, Rt. 4, Greenville, Ala.

BEES BY THE POUND, ALSO QUEENS—Booking orders now. Free circular gives prices, etc. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas, E. B. Ault, Prop.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook, 1 Atf 84 Cortland St., New York City.

HONEY AND BEESWAX

FOR SALE—We have a limited amount of our crop white clover, extracted basswood honey, all packed in new 60-lb. cans, 2 to the case. Write for prices. D. R. Townsend, Northstar, Mich.

FOR SALE—Clover and buckwheat honey in any style container (glass or tin). Let us quote you. The Dero Taylor Co., Newark, N. Y.

WANTED—White clover or light extracted honey. Send sample; state how honey is put up and lowest cash price delivered at Monroe; also buy beeswax. E. B. Rosa, Monroe, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5¢ a pound for wax rendering. Fred W. Muth Co., 204 Walnut St., Cincinnati, Ohio.

FOR SALE—10,000 lbs of fine clover-alfalfa extracted honey in new 60 lb. cans, 2 in case. An exceptionally fine lot of white honey. Interested parties address Custer Battlefield Apiaries, Hardin, Mont.

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FOR SALE—About 50 colonies of bees, mostly Italians; also complete hives, supers, comb and extracted, and other used equipment. Bees and supplies are located near Lansing, Mich. Duplicate volumes A. B. J. and Gleanings also for sale or exchange. F. Eric Millen, O. A. C., Guelph, Ontario, Canada.

FOR SALE—Yellow biennial sweet clover seed; hulled at 30¢ a pound, unhulled at 18¢ a pound. This is the Big Yellow, and great for bees. All seed sent on money back guarantee if not satisfactory. F. Rasmussen, Rockville, Neb.

FOR SALE—Eleven months Rufus Red Belgian does, bred, \$3 each. Erwin's Stock Farm, Walled Lake, Mich.

FOR SALE—.30-calibre Remington automatic rifle, slightly used, \$25. Thos. Cordner, Rt. 7, Sparta, Wis.

FOR SALE—Good bee location, about 75 miles south of St. Louis, 40 acres unimproved timber land in the fruit belt of eastern Missouri; \$400 buys it if taken at once. Eugene Neuman, Prescott, Arizona.

FOR SALE—160 acres Oklahoma farm land in oil region; raises good wheat, oats, cotton, etc. Frank Durkee, owner, Rt. 4, Ottawa, Ill.

FOR SALE—We are closing out our bee business consisting of 90 colonies of bees in Dadant hives, complete operating equipment and 88 empty Dadant hives. Baxter Bros., Leavenworth, Kans.

FOR SALE—7-room house, 1 acre of land in good condition, and 50 colonies of bees; 80 minutes ride from Chicago. P. Greenwall, 82 2nd St., Elmhurst, Ill.

WANTED

WANTED—Your old combs, cappings and slungum to render into beeswax. We get enough more wax with our well equipped presses to pay for our work. Dadant & Sons, Hamilton, Ill.

WANTED—200 or less colonies of bees (any style hive) for spring delivery. Address. A. W. Smith, Birmingham, Mich.

WANTED—Your order for "Superior" Foundation. Prompt shipments at right prices. Superior Honey Co., Ogden, Utah.

WANTED—A 2 or 4 frame second-hand reversible extractor; also steam uncapping knife. Maggie Stripling, Altamaha, Ga.

WANTED—Bees. Will buy any number; must be free from disease, strong, healthy colonies in good hives. What have you for sale? Give lowest prices and state number for sale. A. A. Rieff, St. Peter, Minn.

WANTED—Undamaged copies of February, 1920 American Bee Journal. Will pay 10¢ a piece. When mailing wrap so the entire copy is covered. American Bee Journal, Hamilton, Ill.

WANTED—Extracted honey in white and amber grades. State lowest price; how packed. Send sample. Harmony Bee & Honey Co., White Bear Lake, Minn.

WANTED—Hershiser wax press. Give price and condition. O. W. Bedell, Earlville, N. Y.

WANTED—Opportunity by man with some capital to enter into partnership or buy out apiary with farm and home. L. K. Edgett, R. D. No. 3, Titusville, Pa.

WANTED—5 to 100 colonies of bees. R. Stecher, 1240 Barry Ave., Chicago, Ill.

WANTED—A few cases extracted honey. Edw. A. Winkler, Joliet, Ill.

SITUATIONS

WANTED—One experienced man, and students or helpers, in our large bee business; good chance to learn. Modern equipment and outfit, including auto truck; located near summer resorts. Write, giving age, height, weight, experience, references and wages wanted. W. A. Latshaw Co., Clarion, Mich.

WANTED—Experienced beeman. If suits and stays 6 months will pay his fare one way. Must know about bee diseases. Must give references. F. P., care American Bee Journal.

WANTED—Situation by a teacher with experience with bees, beginning May 25. M. M. Rex, Valparaiso, Ind.

WANTED—Position with extensive beekeeper, by man 33, with some beekeeping experience. Available early in April. Herbert M. Bachman, 5053 Grand Blvd., Chicago, Ill.

WANTED—Experienced man for comb honey. Give age, experience and salary expected. B. F. Smith, Jr., Fromberg, Mont.

WANTED—Will need more help. Refer to my advertisement February and March; 1,000 colonies. Write fully. E. F. Atwater, Meridian Idaho. Former Special Field Agent in Beekeeping, U. S. Department Agriculture, California, Arizona and New Mexico.

WANTED—Man for season of 1920 to work with bees. State age, experience and wages. We furnish board. Opportunity for permanent situation to right man. Also want man to work in shop, put up honey and do general shop work and make deliveries. The Rocky Mountain Bee Co., Box 1819, Billings, Mont.

WANTED—One or two good queen-rearing men to begin work February 15, 1920. Nueces County Apiaries, Calallen, Texas.

SUPPLIES

FOR SALE—Two uncapping knives; 22 Winchester; 32 revolver. Edw. Hogan, Stanley, N. Y.

FLORIDA BEES AND QUEENS

The first part of April I will be fully ready to fill orders for queens and bees as follows: Two-frame nuclei with untested queen, \$6; untested queens, \$1.50 each; tested, \$2. From my long-tested and best Italian stock.

BEEKEEPERS' SUPPLIES—DADANT'S FOUNDATION

A complete stock of everything for the Dixie beekeepers, right here at home. My cypress catalog of cypress hives and hive parts will interest you in prices.

DIXIE BEEKEEPER

This monthly publication tells of Dixie as a bee country and how we are keeping bees here; \$1 a year. Sample copy free.

J. J. WILDER, Waycross, Georgia

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174 EAGLE MIKADO X NO. 2 X EAGLE

Regular Length, 7 inches

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Conceded to be the Finest Pencil made for general use.

Made in five grades

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FOR SALE—Good second-hand double-deck comb-honey shipping cases for $4\frac{1}{4} \times 4\frac{1}{4} \times 1\frac{1}{4}$ sections, 25 cents per case, f. o. b. Cincinnati; terms cash with order.

C. H. W. Weber & Co.,
2146 Central Ave., Cincinnati, O.

FOR SALE—Good second-hand empty 60-lb honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order.

C. H. WEBER & CO.,
2146 Central Ave., Cincinnati, O.

FOR SALE—First-class light power equipment for making hives and frames, A1 condition engine, 2 saw tables, planer, 4-spindle boring machine for piercing frames, line shafting, pulleys, belts, saws, dado heads.

F. D. Bowers, Sugar Grove, Ill.

FOR SALE—8 and 10-frame hive bodies, covers and bottoms, Hoffman brood frames. I make them and can save you money. Odd size hives and frames made to order. Write for price list.

F. D. Bowers, Sugar Grove, Pa.

SEND us a list of goods wanted and will quote you lowest prices. We are the money-saving house. Price list free. Try us.

H. S. Duby & Son, St. Anne, Ill.

FOR SALE—250 shallow extracting supers, 9 excluders; a bargain; write.

James McKee, Riverside, Calif.

FOR SALE—Thirty 10-frame hives with metal covers.

Thos. Cordiner, Sparta, Wis.

I MANUFACTURE cypress bee hives, and sell Lewis' beeware. Write for booklet.

J. Tom White, Dublin, Ga.

MISCELLANEOUS

WANTED—Beeswax, old combs and cappings to render on shares. Will pay highest market price and buy your share of the beeswax.

F. J. Rettig & Sons, Wabash, Ind.

WRITE for shipping tags and our prices for rendering your old combs, cappings, etc. We guarantee a first-class job.

The Deroy Taylor Co., Newark, N. Y.

FOR SALE—California Wonder Corn for seed, doubles yield. Send for circular.

James McKee, Riverside, Calif.

\$48 incubator, \$20; exchange for extractor, saw table or offers.

Lorenzo Clark, Winona, Minn.

FOR SALE—100 early cabbage or 100 early tomato plants, 50 cents; 100 sweet mango plants, \$1, post paid.

J. F. Michael, R. 1, Winchester, Ind.

FOR SALE—Winchester rifle, 32 calibre, good condition, \$12. Will take bees in trade.

Kenneth Cook, McGrann, Pa.

FOR SALE—Klondike strawberry plants, 60c per hundred, one Italian queen with each \$10 order.

B. O. Brown, Kingsport, Tenn., R. 3.

FOR SALE—Silver Spangled Hamburg eggs and fine cockerels.

Elias Fox, Union Center, Wis.

BLACK SIBERIAN HARES—Enormous sizes, delicious meat and beautiful fur. Write for information and prices.

Siberian Fur Farm, Hamilton, Canada.

FOR SALE OR EXCHANGE—My entire Rabbits, including hutches, 2 New Zealand bucks, 2 New Zealand does, 2 Belgian does, 5 New Zealand young 4 months old; one of Belgian does has litter of 8. Will take \$50 for entire lot, or will exchange for bees in good hives.

F. J. Shotwell, Martelle, Iowa.

TWO NEW BEE BOOKS

We have just completed publication of two new bee books, special in their field, and for which there has been insistent demand

AMERICAN HONEY PLANTS

Including those important to the beekeeper as sources of pollen

By FRANK C. PELLETT

This book is the result of many years of personal investigation and travel from New England to California and from Canada to Florida and Texas to secure first-hand information on the sources of nectar and pollen. It is splendidly illustrated with 156 photographs, and describes the honey plants of all parts of America. A list of the honey plants of each State is given separately and the plants described in alphabetical order.

A knowledge of the flora is important to every beekeeper, as it is often possible to double the crop by moving an apiary but a few miles. This book is written by an expert beekeeper and a competent observer, only after having visited apiaries in most of the important honey-producing districts. 300 large 8vo pages. Enamored paper. Price \$2.50.

OUTAPIARIES

By M. G. DADANT

The development of beekeeping has been in direct relation to the extension of outyards in most localities. The Dadant family has kept bees extensively in the same locality for three generations and the author of this book has spent his life in commercial honey production.

The book deals with the business of beekeeping on a large scale, and describes the methods and practice of the most successful beekeepers. Special chapters on honey houses and equipment, autos and trucks and similar apparatus required by the extensive honey producer.

125 pages, 50 illustrations. Price \$1.

Add 75 cents to the price of either of the above books and get the book and the American Bee Journal for a full year.

AMERICAN BEE JOURNAL, Hamilton, Illinois

PRICES OF QUEENS

	Nov. 1 to June 1			June 1 to Nov. 1		
	1	6	12	1	6	12
Untested	\$2.00	\$9.00	\$16.80	\$1.50	\$8.00	\$14.50
Select untested	2.25	10.50	18.00	2.00	9.50	16.00
Tested	3.00	16.50	30.00	2.50	12.00	22.00
Select tested	3.50	19.50	36.00	3.00	16.50	30.00

Breeders \$7.50 to \$15.00

Queens for export will be carefully packed in long-distance cages, but safe delivery is not guaranteed.

"The queen that I got from you last season made honey when the other bees were taking lunch to the fields with them (when they went at all)".

H. M. TICHENOR, Centertown, Ky.

No Nuclei, Full Colonies or Pound Packages.

BEN G. DAVIS, Spring Hill, Tenn.**MARSHFIELD GOODS****BEEKEEPERS**

We manufacture millions of sections every year that are as good as the best. The **cheapest** for the quality; **best** for the price. If you buy them once, you will buy again.

We also manufacture hives, brood-frames, section holders and shipping cases.

Our Catalog is free for the asking

MARSHFIELD MFG. CO., Marshfield, Wis.**BEEKEEPERS' SUPPLIES—QUALITY AND SERVICE**

Now is the time to order your season's supply of Bee Material so as to have them ready for the honey flow. For lack of hives and other goods, you cannot afford to let your bees fly away, bees are valuable. We have everything required for practical beekeeping. Our goods for ideal of quality, quality of workmanship. Our 1920 catalog is now ready to send out, send for one, it is full of good stuff.

AUGUST LOTZ CO., Boyd, Wis.**BEE SUPPLIES**
FALCON LINE

Best goods made. Get our big discount sheet before buying.

C. C. CLEMONS BEE SUPPLY COMPANY128 Grand Ave.
Kansas City Mo.**PORTER**

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SAVES
HONEY
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MONEY**

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lowistown, Illinois, U. S. A.
(Please mention Am. Bee Journal when writing)

Send for Catalogue of
Honey Labels and Stationery.

American Bee Journal

BEES

We furnish full colonies of Italian bees in double-walled hives, single-walled hives, shipping boxes and 3-frame nucleus colonies.

**I. J. STRINGHAM, Glen Cove, N. Y.
NASSAU, CO.**

WESTERN BEEKEEPERS!

We handle the finest line of bee supplies. Send for our 68-page catalog. Our prices will interest you.

The Colorado Honey Producers' Association, 1424 Market St., Denver, Colo.

ATTRACTIVE CLOTHES

Do not make the man, but they add greatly to his appearance.

Just so with your honey. It must have quality, but should have a neat package and an attractive label.

We can furnish the label. In many sizes and shapes suitable to fit any container.

Write for our new price list of honey labels and stationery.

American Bee Journal, Hamilton, Ills.

QUEENS WITH A REPUTATION—QUEENS

No doubt you would like to make a bumper honey crop this year. See that every colony has the very best queen obtainable; there's no better way of insuring the utmost honey from each hive than buying some of my queens to replace those that are not up to the scratch. With expensive equipment and high-priced labor you cannot afford to nurse those weak colonies, that somehow don't build up with the rest of the apiary, for the lack of prolific queens.

None of my queens are "baby nuclei" reared; consider what this may mean to you. Doolittle's stock speaks for itself, and I can supply your wants at the following prices:

	Before July 1.			July 1 to Nov. 1.		
	1	6	12	1	6	12
Untested -----	2.00	\$8.50	\$15.00	\$1.25	\$6.50	\$11.50
Select Untested -----	2.25	9.50	18.00	1.50	7.50	13.00
Tested -----	3.00	16.50	30.00	2.00	10.00	18.50
Select Tested -----	3.50	19.50	35.00	2.75	15.00	27.00

Terms strictly cash; one-fourth with order, balance just before shipping. Safe arrival and satisfaction guaranteed, or your money back. Absolutely no disease.

JENSEN'S APIARIES, PENN, Lowndes Co., Miss.

BEEKEEPERS ATTENTION

You can make your business more profitable and easier to handle through the proper use of modern equipment. This is supplied in LEWIS BEEWARE by

WESTERN HONEY PRODUCERS
SIOUX CITY, IOWA

SEND LIST OF YOUR NEEDS OR REQUEST FOR NEW CATALOG TO DEPT. B

QUEENS OF QUALITY—Farmer's Queens Speak for Themselves

MR. BEEKEEPER: Why not get a good queen while you are buying? Farmer's queens produce workers that fill the super quickly with honey that is most delicious to eat. They are bred for honey production strictly. Shipping season is here; now is your time to head your colonies with a good queen. One that will keep the hive chock full of bees at all times, makes the biggest yields of honey, sting less, and look the prettiest. Our strain of Italians will go a long distance after nectar. In a high degree we breed from imported stock from Italy, the very best obtainable for honey gathering. They are very resistant to disease, gentle and beautiful, not given to swarming, hardy, long-lived.

Untested queens ----- 1, \$1.50; 6, \$7.50; 12, \$13.50
Select untested queens ----- 1, \$1.75; 6, \$9.00; 12, \$16.00

You take no risk when you buy our queens, for we guarantee them to reach you safely, to be purely mated; and we leave the word satisfaction to the purchaser. Why we can do this is because we know what we are going to send out. Purchaser is the sole judge of our queens; if they don't give satisfaction, return them and your money will be refunded.

References as to our standing: Bank of Ramer, Ramer, Ala. Shipment made on time.

THE FARMER APIARIES, Ramer, Alabama Where the Good Queens Come From

QUEENS, SELECT THREE-BANDED ITALIANS

Reared from the best mothers and mated to select drones.

Prices of Queens

	May 1st to June 1st			June 1st to July 1st			July 1st to Nov. 1st		
	1	6	12	1	6	12	1	6	12
Untested -----	\$2.00	\$9.00	\$16.80	\$1.50	\$8.50	\$14.50	\$1.30	\$7.50	\$13.50
Select Untested -----	2.25	10.50	18.00	2.00	9.50	16.00	1.75	8.50	15.00
Tested -----	3.00	16.50	30.00	2.50	12.00	22.00	2.00	10.00	18.50
Select Tested -----	3.50	19.50	36.00	3.00	16.50	30.00	2.75	15.00	27.00

Orders booked now for May delivery. Pure mating, safe arrival and entire satisfaction guaranteed. Wings clipped free. Write for descriptive circular.

HARDIN S. FOSTER, Columbia, Tenn.

Crop and Market Report

Compiled by M. G. Dadant

For our April report we asked the following questions of reporters: 1. How much honey is left on hand? 2. At what price is it being sold or held? 3. What is the winter loss, so far? 4. Will there be losses from starvation? 5. What are the crop prospects? 6. How many bees, compared to last year?

HONEY ON HAND

Throughout the entire East beekeepers report practically all honey sold. Exceptions are one large beekeeper in the South reporting one-third of his crop still on hand. The Central West, Texas, Colorado, New Mexico and Arizona, are well sold out. Utah reports three or four cars on hand; California has possibly 10 per cent of its honey on hand, but moving well.

It is in the Northwest that the biggest amount of honey is still held. Montana reports possibly 75 per cent of its honey unsold, while Idaho estimates are that there are still 30 cars to be sold.

PRICES

For local sales, the honey price is still maintained at its high level. Beekeepers who sell near at home have not had to shade prices to get rid of their honey. The jobbing and carload price is dropping some. Best honey is now being quoted at 17 and 18 cents. One large buyer reports being able to buy for 16 cents, honey which he paid 22 cents for in the fall. The foreign demand, owing to the unfavorable exchange, is nil, so that all honey has to be marketed in the domestic centers. Some beekeepers are still holding for 20 cents in car lots, but most of them would be willing to sell at 17 cents f. o. b. shipping point.

WINTER LOSSES—Starvation

It is yet a little early to give winter losses. Yet there is a strong undercurrent of feeling that the losses will be extra heavy. The North has had a long, unbroken winter, bees often being shut in four months without a flight. Winter cellared bees will do well, but losses already reported are heavy, especially in New England, New Jersey, New York, Pennsylvania, Ohio, Michigan, Wisconsin, Minnesota and parts of Iowa and Nebraska. A little farther south, where bees had a flight or two during the winter, the loss will be normal, probably, except for starvation, which also has been above ordinary, owing

to light stores in the fall and shortage of sugar.

Sugar seems easier to get this spring, and we advise all beekeepers to get in touch immediately, either through local grocers or direct, with their nearest wholesale grocer, who should be able to supply them. We have been able to get no satisfaction by writing direct to sugar companies, or to the sugar board. We have obtained sugar for our own bees at wholesale for about 17 cents f. o. b. here.

CROP PROSPECTS

The long closed winter of the North has been attended by many snows, the clover is well covered and should have abundant moisture when spring opens. Most clover localities report fair to good prospects. Illinois, Indiana and parts of Iowa and Missouri are exceptions. In the South conditions are normal, while Texas expects a better crop than usual.

In the mountain states and the Northwest it is yet too early to make predictions. California reports good prospects for orange, with rather discouraging reports for the sage, on account of lack of rain. Late rains have helped improve the situation.

NUMBER OF BEES

In some scattered localities there will be considerable increase. In most, however, it is doubtful whether the increase will more than make up for winter losses.

HONEY MOVEMENTS

The Government report from the Bureau of Markets under date of March 1 reports honey movements as slow, with but little call by the jobber. Very little comb honey is left on hand. Whether all of the 1919 crop of honey will move before the new crop is ready is doubtful.

It hardly seems that honey would maintain the high level of 1919 during the fall of 1920. Sugar seems to be easier and is being quoted for fall delivery at a figure reduced very much over present levels. Our advice would be, wherever possible, to maintain and encourage the local markets.

Organization will help. The three large co-operative organizations of Colorado, Texas and California have had very little trouble disposing of the crop, and at excellent prices. The Texas honey was all sold at home, and some is being imported to fill the demand.

"Falcon"



I am a "Falcon" bee

"Falcon"

I live in a "Falcon" hive.

I am gentle and contented. I love to work in my home because everything is just as I like it.

The hive body is well constructed; that is why our honey crop is always plentiful. Our queen is a "Falcon" queen—she is a three-banded Italian of pure healthy stock.

We all agree that our colony is successful, but so are all the "Falcon" hives in our apiary.

The other bees tell me when we meet in the fields.

Send at once for a "Falcon" queen, a hive or any bee supplies you need. Don't delay. Spring will soon be here.

"Falcon" bees and supplies always give the best results.

I KNOW BECAUSE—I AM A "FALCON" BEE

W. T. FALCONER MANUFACTURING CO., Falconer, N. Y.

Where the best Bee Hives come from

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THE ALUMINUM HONEYCOMB

THE WAY TO GREATER PRODUCTION

We are shipping "MONEYCOMBS" all over the civilized world, their success is tremendous.

The question is not, can you afford them, but how can you do without them? Make your bees be efficient.

Beeswax is the most costly product of the honeybee and since wax for comb building can only be produced at the expense of many times its weight in honey it is well that the ingenuity of man has invented one of the greatest aids to profitable beekeeping—the Aluminum Honeycomb.

With MONEYCOMB you can:

1. Produce more honey
2. Extract cleaner, no breakage
3. Control all disease
4. Raise more brood
5. Save loss from melting and destruction by animals and insects

"The Aluminum Comb 'MONEYCOMB' is here to stay; its assistance to beekeepers is invaluable.

"H. B. PARKS, State Apiary Inspector of Texas."

"My honeyflow was so light the bees would not draw out the foundation. I was compelled to use aluminum combs, 'MONEYCOMBS,' for brood rearing, and they proved an unqualified success.

"GEORGE D. SHAFER, Palo Alto, Calif."

"My experience with 'MONEYCOMBS,' the aluminum honeycomb, caused me to rank it with the centrifugal extractor.

"A. Z. ABUSHADY, editor of 'Bee World' and Secretary of Apis Club, Benson, Oxon, England."

"I have conducted exhaustive experiments with 'MONEYCOMB,' the aluminum honeycomb, and can heartily recommend it as the most satisfactory honeycomb I ever used in my long experience of bee raising.

"PROF. WILL C. STEINBRUNN,

"Principal of Los Gatos School of Apiculture, San Jose Street, Alameda, Calif."

Our Factory is now fully equipped and your order will be shipped immediately on receipt. Made in Langstroth or Hoffman sizes at 60c per frame, f. o. b., Pasadena. Write for prices on both shallow and Jumbo sizes. Discounts given on large orders.

Booklet "B 1" describing "MONEYCOMBS" mailed on request.

ALUMINUM HONEYCOMB COMPANY

FACTORY AND OFFICE
Chester and Colorado Streets, Pasadena, California

QUEENS AND PACKAGE BEES

We advise our prospective customers to place their orders as soon as they can determine what they will need and thus avoid being disappointed in getting queens or bees when desired. By our improved methods of shopping, you will be assured of receiving queens and bees in first-class condition.

Every Queen is reared by me personally, and I assure you that all queens sent out will be the product of my very best efforts. If any should fail to measure up to what a good queen should be, she will be replaced at your request.

Health Certificate: "The State Inspector of Apiaries has this day examined the bees belonging to Jay Smith and found no evidence of any bee disease." Signed, Ross B. Scott, Deputy Inspector. Date, May 28, 1919.



OPINIONS OF OTHERS:

"Queens we got of you are the best we ever had, bar none."—Klabuhn Brothers, Conneaut, Ohio.

"The four 2-pound packages of bees I bought of you built up into rousing colonies and gave some surplus."—J. Strathe, Winnipeg, Canada.

"My fifty colonies averaged one hundred pounds surplus. The queen I got of you made two hundred pounds."—Wm. Potter, Chandler, Indiana.

"If I were asked who has the best Italian queens I would say, 'Jay Smith.' In 1918 I had several colonies that produced three hundred pounds of extracted honey each. They were headed with queens that I raised from a queen I got from you in 1916."—F. R. Smythe, Amelia, Ohio.

"The strongest colony of bees I have seen this year was headed by a Jay Smith queen."—D. W. Erbaugh, Onward, Indiana, former State Inspector of Indiana.

Price List

Select Untested Queens—May 15 to July 1—	
One to four, inclusive	\$2.50 each
Five to nine, inclusive	2.45 each
Ten or more	2.40 each
July 1 to November 1—	
One to four, inclusive	2.00 each
Five to nine, inclusive	1.95 each
Ten or more	1.90 each

Bees by the pound—After May 15—

One pound	\$4.00
Two pounds	7.00

In lots of ten or more packages, 5 per cent discount.

Write for our booklet and complete price list.

Safe arrival, pure mating and entire satisfaction is our guarantee.

JAY SMITH, Route 3, Vincennes, Ind.

HIVES, SMOKERS, FOUNDATION MR. BEEKEEPER

HIVES—You can't buy any better hives than these we manufacture. Genuine Root goods. You will need new hives this year to take care of your increase. You may need them soon.

SMOKERS—You know the Root Company is the leader in the manufacture of Smokers. We admit there are no better smokers made than Root Smokers.

FOUNDATION—We have the Foundation. New process, but good old Root quality. You cannot start your season right without foundation. Spring is here and you must use some new foundation.

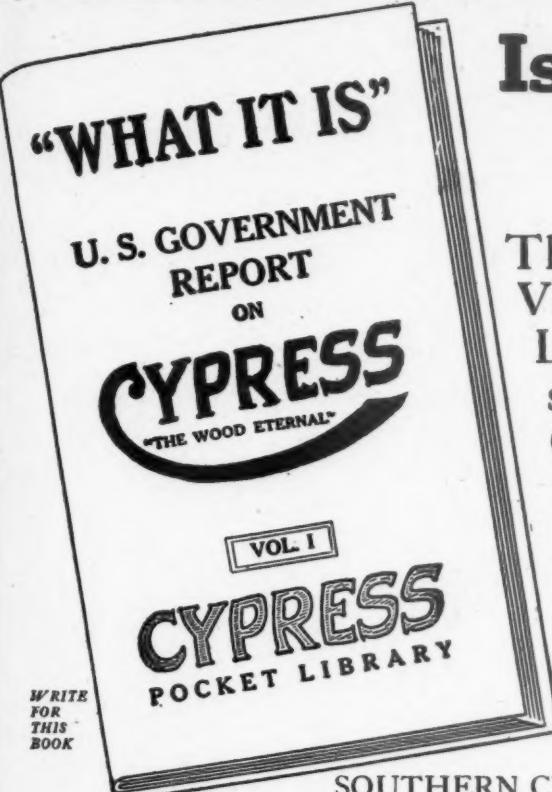
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*Everything considered it pays to buy the best.
So buy Root Goods*

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COUNCIL BLUFFS, IOWA**







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VOL. I
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Is Uncle Sam's Word Good Enough?

Then Mr. Bee-man, just write for Volume I of the Cypress Pocket Library and read what our respected Uncle has to say about Cypress ("The Wood Eternal.") You'll then see why any beehive, or bottom or winter case not made of Cypress is not so good as it might be. 42 other volumes all free. The list is in Volume I. Write and it comes.

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1251 Hibernia Bank Building, New Orleans, La., or 1251 Heard National Bank Building, Jacksonville, Fla.

Insist on TRADE-MARKED Cypress at Your Local Lumber Dealer's

If he hasn't it, LET US KNOW IMMEDIATELY

"GRIGGS SAVES YOU FREIGHT"

QUEENS—BEES

We are booking orders now for our Select Stock of both Golden and Leather Colored Italian Bees and Queens. This stock has been bred with careful attention given to honey gathering qualities and gentleness.

Write us your wants and get our prices. Satisfaction guaranteed.

SUPPLIES

We know you are not the fellow who waits until the las' minute before ordering his supplies.

We have a large stock of new goods to rush to you the minute your order arrives.

Send us a list of goods wanted at once and receive prices, with early order discounts.

These 60-lb. cans will soon be gone; better hurry your order in at once. Two men took a car load.

WHITE CLOVER HONEY

Can use a limited amount of white clover honey, if price is in line.

BEESWAX

We are in the market for large quantities of Beeswax. Write us as to what you have to offer, and prices asked. We pay top market prices, having a good outlet for select wax, nice and clean. We pay spot cash, or will exchange for supplies.

FREE Catalog of Bee SUPPLIES for the asking.

GRIGGS BROS. CO., TOLEDO, OHIO DEPT. 24

"GRIGGS SAVES YOU FREIGHT"

We Will Treat You Equally Well

Mohawk, N. Y., Dec. 30, 1919

*The A. I. Root Co.,
Medina, Ohio.*

Gentlemen:

I have dealt with the Roots for 23 years, and know that honesty and prompt answers are what have made the Root Company what it is today, with good supplies for proof of value received.

One time I sent an order by a neighbor, and he sent 3c over, but the thought of 3c was too much for the A. I. R. Co. to pocket; so they used 2c and an envelope and a slip with the statement to return the 3c. Hats off to the A. I. R. Co.

[Signed] R. C. Morts.

THE A. I. ROOT CO., MEDINA, OHIO